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ABSTRACT

This document contains 21 papers and an introduction on work force preparation in a global context. The following papers are included: "Introduction" (Johanna Lasonen); "Access of Girls and Women to Vocational Education: Implications for the Workplace in Swaziland" (Comfort B. S. Mndebele); "Intersectoral Approaches to Literacy and Vocational Education and Training: The Case of the Sudan" (Sidiga A. Rahim Washi); "Women's Education in the Sudan" (Sidiga A. Rahim Washi); "Research Development and Challenges of the 21st Century for Vocational Education and Training: Canadian Experience" (Marcelle Hardy); "The Business Incubation Concept: Global Possibilities for Vocational-Technical Education" (Victor M. Hernandez-Gantes); "Implementing Education and Training Policies in the United States: A Case Study" (Curtis R. Finch); "A Study on the Development of Further Extensions in Vocational Education and Training in Taiwan, ROC (Republic of China)" (Ming-chung Chiang, Dar-chin Rau); "Networking between Business and Educational Institutes in Taiwan, ROC" (Dar-chin Rau, T. T. Hwang); "Knowledge-Based Cooperation in Vocational Education, University and Industry in Australia" (Matt Nguil); "Strategies for Promoting Parity of

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 "'Bildung' through Vocational Education" (Matti Vesa Volanen); "Shaping the
 Work Life--A Future Oriented Way of Lifelong Learning" (Gerald Heidegger);
 "Towards Understanding the Development of an Entrepreneurial
 Leadership-Identity among Finnish Female Entrepreneurs" (Leena Avotie, Eija
 Pehu); "Enterprises as Environments for Workplace Learning and Training"
 (Johanna Lasonen); "Review and Preview of Higher Vocational Education:
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 Technical-Vocational Education and Training from Global, Regional, and
 National Perspectives" (C. K. Basu); "Human Resource Development and Labour
 Market Policy Issues in the Asia Pacific: Opportunities for Collaborative
 Research with Europe" (Matt Ngui); "Vocational Education and Training
 Projects in Developing Countries: Issues of Quality and Sustainability"
 (Dennis R. Herschbach); and "New Roles for Vocational Education and Training"
 (Armoogum Parsuramen). Each paper contains references. (MN)

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Johanna Lasonen (Ed.)

Workforce Preparation in a Global Context

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CE 079 689

Institute for Educational Research
Occasional Papers 8

Johanna Lasonen
(Editor)

Workforce Preparation in a Global Context



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CONTENTS

.....

ABSTRACT	5
ACKNOWLEDGEMENTS	7
INTRODUCTION	11

Johanna Lasonen

PERSPECTIVES FROM FIVE CONTINENTS

Africa

Access of Girls and Women to Vocational Education: Implications for the Workplace in Swaziland	17
<i>Comfort B S Mndebele</i>	

Intersectoral Approaches to Literacy and Vocational Education and Training: The Case of the Sudan	37
<i>Sidiga A Rahim Washi</i>	

Women's Education in the Sudan	44
<i>Sidiga A Rahim Washi</i>	

America

Research Development and Challenges of the 21 st Century for Vocational Education and Training: Canadian Experience	55
<i>Marcelle Hardy</i>	

The Business Incubation Concept: Global Possibilities for Vocational-Technical Education	67
<i>Victor M Hernández-Gantes</i>	

Implementing Education and Training Policies in the United States: A Case Study	85
<i>Curtis R Finch</i>	

Asia

- A Study on the Development of Further Extensions
in Vocational Education and Training in Taiwan, ROC 101
Ming-chung Chiang and Dar-chin Rau

- Networking Between Business and Educational
Institutes in Taiwan, ROC 114
Dar-chin Rau and TT Hwang

Australia

- Knowledge-Based Cooperation in Vocational
Education, University and Industry in Australia 127
Matt Ngui

Europe

- Strategies for Promoting Parity of Esteem Between
Vocational and Academic Education 145
Johanna Lasonen

- Qualifications With a Dual Orientation Towards
Employment and Higher Education – Innovative
Schemes in Seven European Countries 155
Sabine Manning

- Bildung* Through Vocational Education 167
Matti Vesa Volanen

- Shaping the Work Life – A Future Oriented Way
of Lifelong Learning 178
Gerald Heidegger

- Towards Understanding the Development
of an Entrepreneurial Leadership-Identity
Among Finnish Female Entrepreneurs 186
Leena Avotie and Eija Pehu

- Enterprises as Environments for
Workplace Learning and Training 199
Johanna Lasonen

PERSPECTIVES ACROSS CONTINENTS

- Review and Preview of Higher Vocational
Education: Changes in Hong Kong and
International Trends 219

Bradford W Imrie

- A Comparison of Occupational Programs in
Comprehensive High Schools in the USA,
Japan, and Taiwan 243

Lung-Sheng Lee

- Challenges of the 21st Century for Technical-
Vocational Education and Training from Global,
Regional and National Perspectives 248

C K Basu

- Human Resource Development and Labour Market
Policy Issues in the Asia Pacific: Opportunities for
Collaborative Research with Europe 259

Matt Ngui

- Vocational Education and Training Projects in
Developing Countries: Issues of Quality and
Sustainability 274

Dennis R Herschbach

FUTURE OUTLOOK

- New Roles for Vocational Education and Training 295

Armoogum Parsuramen

- CONTRIBUTORS 317

ABSTRACT

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The task of vocational education is preparing workforce for national and global labour market, developing the national work culture, citizenship skills and individual lifelong learning skills, and promoting national economic growth and competitiveness. Advanced systems of vocational education attempt to provide vocational students with lifelong learning competencies, for example by qualifying them to enter not only labour market but also higher or further education or to alternate between working life and education. The status of vocational education and training in a given country is seen in the amount of public funds devoted to developing it within the educational system, its viability as an avenue to national and individual success, and its ability to attract young people and the adult population as an educational choice. Within this context, the chapters of the book cast light on vocational education from the perspectives of agents occupying various positions of senior experts. The first part of the book comprises national reports, arranged by region, discussing the status of vocational education and training, the standing of and need for research on vocational education, problems of gender equality in education in Africa, trends in vocational policies in the United States, interaction between the economy and education in the Asian-Pacific region, entrepreneurship education, and on-the-job learning. The second part focuses on intercontinental perspectives on vocational education, its status and provision, developmental co-operation in this particular field, and the future prospects of vocational education and training.

ACKNOWLEDGEMENTS

The idea of *Workforce Preparation in a Global Context* was born in 1997, when all its contributors from various parts of the globe came together to attend the congress of the International Vocational Education and Training Association (IVETA) held in Helsinki. Many of the chapters are expanded versions of papers presented at the IVETA congress or at a seminar organised by the Institute for Educational Research, University of Jyväskylä in August 1997. I wish to extend particularly warm thanks to the writers of the book's chapters, without whom the book would not exist. I also appreciate their patience with the delay in its publication, caused by unforeseen funding difficulties and circumstances.

Dr Sabine Manning from the WIFO Research Forum, Berlin, Germany, and Professor Curtis Finch from Virginia Polytechnic Institute and State University, Blacksburg, USA, merit a particular mention and thanks for their contribution as the referees of the papers included in the book. Their suggestions for revision and their comments have made the book more readable and done justice to the writers of its chapters.

The credit for making possible the book's publication goes to Professor Jouni Välijärvi, Director of the Institute for Educational Research (IER), who generously agreed to pay for the costs. Thanks also go to Mr Jouni Sojakka, who heads the Publication Unit of IER, and to Ms Marja-Liisa Mustonen and Ms Kaija Mannström, who processed the text.

The book's intended audience are people interested in developing vocational education and training at national and global level. A particular target are administrators, planners, those responsible for research and development work and for development co-operation, and graduate students.

Johanna Lasonen

December 1999

Institute for Educational Research
University of Jyväskylä
Finland

INTRODUCTION

INTRODUCTION

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Johanna Lasonen

Institute for Educational Research
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Systems of vocational education and training and the usages that they involve are shaped by the historical, economic, cultural and social characteristics and contexts of each country and by special national features of occupational structures and of the development of the division of labour. Vocational education has the task of preparing the national and global workforce, developing the national work culture, citizenship skills and individual lifelong learning skills, and of promoting national economic growth and competitiveness in the context of regional and global markets. Fostering equality, ethical values and environmental protection are issues that depend also on decisions concerning vocational education policies. The problems of the developing nations, which are easily overshadowed by the concerns of the developed countries, warrant special attention. In the context of developing and recognising human resources, formal and informal education and training emerge as fields equally in need of consideration.

Advanced systems of vocational education represent an attempt to provide vocational students with lifelong learning competencies, for example by enabling them, after the completion of their education, to enter working life and/or higher or further education or to alternate between working life and education. Vocational education is increasingly embracing alternative models of constructing study programmes and alternative progression routes and avenues of career development. The amount of esteem that a given country accords vocational education and training is seen in the degree to which vocational education has been developed using public funds within the educational system and in the degree to which the voca-

tional track offers the nation and individual citizens an avenue to success. Indicators of general esteem for vocational education are linked among other things with the degree of attractiveness of vocational education as an educational choice among young people and the adult population.

The present publication has 21 chapters. The first part contains national reports arranged by region discussing themes that may be of general relevance. In the African context the focus is on educational problems linked with gender equality. Professor Comfort Mndebele from Swaziland argues that women's education has prevented them from taking up demanding social duties in accordance with their abilities. At the same time, women's education does contribute to the foundations of social and familial well-being. In her chapter Professor Sidiga A Rahim Washi from Sudan brings out problems involved in women's education and literacy. The three contributors from the Americas focus on research on vocational education in Canada, trends in vocational policies in the United States, and entrepreneurship education. Professor Marcelle Hardy takes up the global problem of the marginal status of vocational education research. What makes this a problem is the fact that research plays an important role in developing vocational education and training and in questions of curriculum design and in systems-level considerations. Professor Curtis Finch surveys the social and historical context within which American vocational education policy has evolved during this century. Professor Victor Hernández-Gantes concentrates on entrepreneurship education. His chapter is based on an empirical study that examined what kind of business incubators community colleges create locally.

Together with his team, Professor Dar-chin Rau introduces his readers to the growth in demand for vocational education in Taiwan. First he discusses, together with Dr Ming-chung Chiang, the increased volume of secondary education as regards the vocational education sector. Vocational education faces the danger of losing touch with the demands of working life. Professor Dar-chin Rau and Dr T T Hwang report on the organisation of cooperation between enterprises and educational establishments. Taiwan is an example of those Asian countries where economic growth has been based among other things on a dynamic and responsive educational system. Mr Matt Ngui continues the discussion on the interaction between enterprises and education in the Australian context. He argues that education and training activities are knowledge-based activities. He analyses the differences between research and the utilisation of research findings in universities and in vocational education. He shows how complex are the cooperative links, in the knowledge-based industry, between personal and organisational networks.

The European contributions focus on questions of the status of vocational education as regards reform strategies, curriculum design, philosophy of education, lifelong learning in the workforce, entrepreneurship ed-

ucation, and work-based learning. Dr Johanna Lasonen presents an European cross-national project that compared upper secondary education reform strategies promoting parity of esteem between vocational and academic education. Where Dr Lasonen suggests an overarching framework for analysing issues of parity of esteem involved in the four reform strategies identified by the project (vocational enhancement, mutual enrichment, linkages and unification), the focus of the chapter by Dr Sabine Manning is curricular themes (integrated learning processes, qualifying for higher education and tracing careers). Dr Manning discusses the question of parity of esteem from the viewpoint of how secondary education could provide students with qualifications with a dual orientation towards employment and higher education. Mr Matti Vesa Volanen discusses the role of vocational education and training as an important tool of education and general human development. The chapter considers the origins of the sharp distinction between and the differential status of vocational and general/academic education. Dr Leena Avotie and Professor Eija Pehu return to the subject of entrepreneurship education. They bring up a topical problem, the underrepresentation of women as compared to men among entrepreneurs and business managers. They analyse the problem from the perspective of the process of education and socialisation, guided by a conscious or unconscious sexually biased system of values and attitudes. Dr Johanna Lasonen concludes the European contribution to the book by outlining the findings of a follow-up study of a Finnish workplace learning experiment, *Bridge From Vocational Education to Working Life or the 2+1 Structure in Finnish Vocational Upper Secondary Education*. The findings are reported on the basis of the answers provided by the target groups of the experiment, providing a survey of employers', students', workplace trainers', and vocational teachers' assessments of workplaces as learning environments.

The second part of the book focuses on themes that may be characterised as intercontinental perspectives. Dr Bradford Imrie argues that higher education systems are moving away from the single-subject academic degree to become pluralistic in provision. There is also a commitment to establish parity of esteem between vocational and academic qualifications. The artificial dichotomy between education and training may also be superseded by and subsumed in the concept of learning - lifelong for individuals, organisations and community bodies. Such aspects of the educational process are linked by qualification frameworks constructed in various parts of the world (eg Hong Kong, New Zealand, South Africa, Scotland). High school or upper secondary education (ISCED3) can be implemented as specialised high school, specialised vocational, or comprehensive high school programmes. Different programmes have qualified students in different ways. Dr Lung-Sheng Lee compares vocational programmes in American, Japanese and Taiwanese high schools against se-

lected indicators. Dr C K Basu argues that a broad range of ecological, social, demographic, economic and technological issues and an increasing demand for technical secondary education for women will not be met through traditional forms of vocational education and training curricula and provision. His chapter discusses a multi-dimensional approach to VET, new demands on VET teacher education and training, and the role of distance learning. Mr Matt Ngui continues his discussion of human resources development and labour market policy issues in the Asian-Pacific region. The chapter outlines three case studies of the labour market in Australia, Malaysia and People's Republic of China. Mr Ngui goes on to suggest strategies for collective action in collaborative research and for sharing of resources by scholars and practitioners in vocational education between the member states of the European Union and the countries of the Asian-Pacific region. Professor Dennis Herschbach examines the problem of implementing and sustaining vocational education and training programmes in developing countries. The chapter suggests that policy-makers, donors and planners need to give much greater attention to understanding the implementing context, appraising project complexity, and fitting projects to local contexts. Professor Herschbach develops a model intended as a means of examining the interdependent relationship between the implementing context and the technical dimensions of VET projects.

Finally, as a future outlook, Director Armoogum Parsuramen introduces UNESCO's recommendations concerning technical and vocational education and training (TVET) for the 21st century. He also discusses the new roles emerging for TVET.

The chapters of the book cast light on vocational education from the perspectives of agents occupying various positions of senior experts. The book's intended audience are administrators, planners, those involved in developmental research and other people in expert positions in the field of vocational education and training, and graduate students. Its aim is to arouse discussion about the problems of vocational education and their solutions.

**PERSPECTIVES FROM FIVE
CONTINENTS**

Africa

ACCESS OF GIRLS AND WOMEN TO VOCATIONAL EDUCATION: IMPLICATIONS FOR THE WORKPLACE IN SWAZILAND

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Introduction

Background to the Problem

Endeavours have been made to reduce gender stratification within vocational education and the labour market in Swaziland. National policies have been developed to promote equal access of females to resources for the enhancement of women's full participation in economic development. However, society's, teachers' and students' attitudes are not easily changed because of firmly embedded gender-role norms and work force expectations. Swazi society transmits sex stereotyped role models to children from early childhood through informal and formal education processes as well as through workplace role models. "In Swaziland gender biases and sex stereotypes are ingrained in societal attitudes held in the family, school, and workplace" (Mndebele, 1996, p.134). As Keregero (1995) rightly puts it (p. 20):

The traditional values of the Swazi women are expected to include obedience, submissiveness, and humility. Women are also discouraged from being argumentative, critical and confrontational, particularly in the presence of men. The socialization process leading to these attributes tends to limit women's access to the kinds of educational opportunities which demand and enhance assertiveness, debate, dialogue, critical thinking, experimentation and inquisitiveness.

However, great efforts continue to be exerted through research endeavours to address gender disparity and equity problems in Swaziland (Mndebele, 1996). These are attempts to decrease the existence of sex stereotyping and discrimination in vocational technical education (Mndebele, 1996).

Statement of the Problem

People's perceptions of gender roles can be an obstacle to educational, occupational, and leisure choices. A solution to the problem of promoting access to, and equality in, vocational education may lie in changing attitudes and conceptions of gender roles embedded in the institutions of Swazi society. For attitudes are assumed to guide people to adopt different occupational and workplace roles. Because attitudes are learnt, they can also be changed. Knowledge about gender-role attitudes in vocational education and in the workplace can help prepare people to choose and train for occupations non-traditional for their sex. Further, consciousness about the genesis and nature of gender-role attitudes and practices can gradually enhance rectification of gender bias and segregation in vocational education, and in the workplace. Awareness of gender-role attitudes and practices, and their impact on behaviour, has the potential to help teachers, parents and policy makers work towards the elimination of gender-role stereotyping. This investigation attempted to answer the research question: **What is the status regarding the promotion of equal access of girls/women to vocational education in Swaziland?**

Statement of Purpose

The purpose of the study was to survey and aggregate data on the status of women and girls in the context of vocational education, and determine the participation and promotion of equal access of women and girls in vocational/occupational education in Swaziland. Further, the study ascertained knowledge of, consciousness about, and awareness of gender-role attitudes, practices and policy measures that constrain full participation of females in the economic development of Swaziland.

Data Collection Procedures

Although the discipline of education is primarily concerned with people, many interesting and useful research projects in the area have been concerned with information obtained by examining existing records and documents of primary data. Much available statistical data refer to socio-economic information about age, sex, family size and occupation. In addition, a small but steadily increasing body of data is being collected by various institutions on psychological characteristics such as personality, anxiety

and attitudes. Available statistical records are now being used as social indicators to chart the status and change in the quality of life (Kidder, 1981). Hence, the procedures employed in this study to collect data utilized existing documents as data sources.

Conceptual Framework: Gender Inequalities

In Africa, south of the Sahara, access to education and land for women, and opportunities of women to high profile positions are generally low. "Traditionally in Swaziland, boys generally take technical studies while girls take home economics. In business and agriculture the divisions are less rigid but selection of subjects is still sex-determined to some extent" (Educansult Limited, 1992). As regard sex-intensiveness of a field "many researchers consider a field to be sex-intensive if 70% or more of the workers employed nationally are of one sex" (Culver & Burge, 1985). For an example, if female workers make up 30 % or less of an occupational area, the occupation is identified as non-traditional for females. Gender balanced occupations are those with a ratio smaller than the 70:30 standard. Going by this definition, in the Swaziland context, home economics is a female-intensive programme whereas technical (trade and industrial) education is a male-intensive programme or occupation (Mndebele, 1996).

Social beliefs influence and are influenced by the school's curricula and teachers. In Swaziland gender biases and sex stereotypes are ingrained in societal attitudes in the family, school and work place (Mndebele, 1995). For an example, teachers tell students to ask their mothers to pack a school lunch, sending the message that domestic and parenting home chores are meant for females. Stressing the importance of teachers as role models in facilitative measures to address issues and problems of gender stereotypes and equity in the Swaziland educational system, Educansult Limited (1992) stated that:

As long as men do not participate in the traditionally female fields, there will continue to be a perception in society that some jobs are women's and other jobs are men's. Those women who do manage to enter the "male" fields will continue to be seen as aberrations. However, when men are encouraged to select their careers based on their true interests and abilities, rather than on the general perception of what is acceptable, gender stereotyping begins to break down. As is true for female students studying with a female woodwork instructor, male students will be much more positively influenced in actively meeting (and studying under) a male home economist than by being told that such things are possible.

Acquisition of cultural knowledge by vocational instructors for working with gender stereotypes is of paramount importance. Gender disparities in educational settings are not merely the consequence of formal instruction but rather in a more profound way the culture of the school is involved in constructing gender and sexuality through the hidden curriculum teaching "in an implicit way, meanings and behaviours associated with femaleness and maleness, with femininity and masculinity" (Wajcman, 1991). Girls internalize their beliefs of boys' masculinity and their femininity as women and thus perceive themselves as inferior. This is socialization that fosters and reproduces the cultural stereotypes of women.

Barriers to Non-traditional Occupations

A large body of literature exists concerning barriers faced by those who are interested in non-traditional occupations. These studies have implications for the improvement of sex equity through vocational education. These barriers are (Burge & Hillison, 1987, p. 11): (a) poor self concept, (b) fear of failure, (c) fear of success, (d) role conflict, (e) lack of non-traditional role model, (f) lack of achievement motivation, and (g) external locus of control. Let us briefly describe each of these barriers that students who want to prepare for occupations non-traditional for their sex, and workers who may wish to look for jobs in such areas, may encounter.

Poor Self Concept. Attitudes and behaviours that males and females express toward sex roles influence their self concepts. Females, more often than males, frequently need more of the process of individuation in the development of more positive attitudes of self worth (Burge & Hillison, 1987). Those people who suffer from a poor self-esteem are unlikely to go for the unknown which may be presented by vocational preparation and employment non-traditional for their sex.

Fear of Failure. Defining fear of failure, Burge and Hillison (1987) state that it is a "disposition to avoid failure and/or a capacity for experiencing shame and humiliation as a consequence of failure" (p.12). Females have traditionally been socialized to be dependent rather than independent, thus they tend to lack the courage to express publicly an occupational aspiration in a non-traditional area. They fear public humiliation in the event they fail.

Fear of Success. Females who have a fear of success, more likely than not, may shy away from developing interests and skills that are likely to lead them to competition with males, and success may lose them friendships with both men and women. On one hand men may not like the competition, and on the other hand, women may view the successful women in a non-traditional area as rather unfeminine.

Role Conflict. In a traditional sense women perform the role of complementing a significant male. Men are expected to work outside the home

while women keep house. A double-role conflict emerges and indeed occurs when a woman, in a society that expects her to keep house, wishes not only to work away from home, but also work in a non-traditional occupation for her sex.

Lack of Non-traditional Role Model. Lack of a role model for combining work and family roles is important for both males and females. Studies have indicated that females whose mothers did not work after marriage were less likely to pursue a career non-traditional for their sex (Burge & Hillison, 1987). Presently in Swaziland, it appears like women are making progress in becoming working role models for the generation to come, but not often enough in non-traditional occupations.

Lack of Achievement Motivation. Males, more frequently than females, are encouraged and sometimes even pressured to enter competitive environments. There is a tendency by parents, spouse and significant others to discourage females who wish to achieve in non-traditional areas of vocational training and employment.

External Locus of Control. Locus of control makes a significant contribution to how persons view prospective occupational preparation and career choice. In a study (Burge & Hillison, 1987) of adolescents, females with an internal locus of control preferred non-traditional occupations. A person with a greater internal locus of control will more than likely operate from a more secure psychological base. Females tend to have a high degree of external locus of control rather than a high degree of internal locus control observable more in males.

Gender Inequalities in the Swaziland Context

Although great achievements have been made in the provision of equal, and to some limited extent equitable, opportunities for females, greater female participation in all sectors of the economy remain limited. In the context of Swaziland agriculture and the contributions of women, much needs to be done to provide women equal and equitable access to inputs of agricultural production. Although women dominate in agricultural activities, their efforts are constrained by prevailing socio-cultural structures and processes. Women in Swaziland have poor access to extension services as a consequence of (Keregero, 1995): (a) Limited opportunities for functional interaction between extension workers and women clientele; (b) Male domination in the personnel of the agricultural extension service; (c) The stereotype of the farmer as an adult married male who is, presumably, a household head and has access to land; (d) Male constructed technology that is disseminated through male oriented structures; (e) Women's exclusion from decision making regarding farming; (f) Inaccessibility to land;

and (g) Relative poverty of women compared to men (p.8).

Women in Swaziland remain excluded from the decision making structures and processes that pertain farming activities. Such farming activities as enterprises to be raised, procurement of inputs, and securing a loan, are in the realm or domain of males. Excluding women, which is based on cultural and legal premises, reduces the productivity of women in agriculture (Magagula, 1991). Cattle which can be used as collateral for a loan, are said to be owned by a male head of the household or homestead. Thus women have very limited access to cattle, though they may own a few individual cattle, as accessible property. In the words of Armstrong and Nhlapo (1985, p.105):

The head of a homestead is generally said to "own" all cattle at the homestead, although there may be underlying realities of ownership which he may not disturb. Since cattle are therefore controlled by men, women are denied credit because they cannot raise the necessary collateral.

The position of women in Swaziland is such that they are strategically and systematically disadvantaged by the sex biases inherent in the Swazi culture and custom. Social norms control the behaviour of women and constrain their full participation in development. In the words of Keregero (1995, p.19):

It is considered a reasonable requirement that women respect and obey men. The patriarchal structures of Swazi society put men into decision-making positions and women into decision-implementing positions. This implies that women are not openly socialized for decision-making and leadership.

Gender disparities in agricultural activities disadvantage women and thus hamper development and initiative. The social and cultural environment in Swaziland allows for the exploitation of women, particularly, in the agricultural sector.

Gender Inequalities in Schooling, Training and Employment

The population of Swaziland is estimated to be growing at a rate of 3.5 %. By the year 2016 the population is projected to have reached just over 2 million as shown in Table 1. The student population at primary and sec-

Table 1. Population Projection, Swaziland 1991–2016

Year	NO FERTILITY CHANGE	SLOW FERTILITY FALL	FAST FERTILITY FALL
1991	845,201	840,126	835,029
1996	1,017,075	991,500	965,765
2001	1,227,674	1,159,871	1,091,447
2006	1,485,402	1,345,283	1,203,541
2011	1,800,514	1,544,852	1,310,776
2016	2,186,607	1,751,748	1,434,227

Source: J.G.C. Blacker: Fertility, Mortality and Population Growth in Swaziland, 1990.

ondary school levels shown in Table 2 has somewhat more male students than female students enrolled particularly at the primary level.

In vocational and technical teacher training, the enrolment and hence participation of males is much higher than that of females. These data are shown in the second portion of Table 3. This reflects strong sex stereotyping in occupational preparation which may subsequently be portrayed by the workplace.

Occupational preparation at MITC portrays sex stereotyping with a high enrolment of males in traditionally male dominated occupations. Data in Table 4 indicate that there is high enrolment of males in traditionally male intensive programmes. However, the agriculture programme has female students almost equal to male students enrolled.

The Swaziland College of Technology (SCOT), the second largest institution of tertiary education in the country, offers a range of vocational and technical programmes that are sex-stereotyped in their enrolment patterns. These data are shown in Table 5. The majority of males enrol for traditionally male dominated programmes and likewise females enrol for traditionally female-intensive programmes. Participation of males and females in higher vocational/technical education is influenced by sex of learner. Programmes at SCOT tend to favour male access and participation.

Of the total working population, females constitute about 32 %. There are more women than men with little education that constitute the working population. These data are shown in Table 6. Apparently, women who constitute the working population have little access to formal education.

There are more male paid employees than female paid employees, a situation that militates against women, as shown in Table 7. Further, there are more female than male unpaid family workers. More females than males

Table 2. *Number of Students by Sex In Schools in 1986–1994*

	YEAR	SCHOOLS	MALE STUDENTS	FEMALE STUDENTS	TEACHERS
Primary:	1986	471	71,475	70,731	4,290
	1987	477	74,215	73,528	4,462
	1988	481	76,815	76,080	4,665
	1989	490	78,835	78,510	4,890
	1990	497	83,788	82,666	5,083
	1991	514	87,245	85,663	5,347
	1992	515	91,174	89,111	5,504
	1993	520	94,641	91,630	5,696
	1994	521	97,807	94,792	5,887
Secondary:	1986	100	15,418	15,071	1,671
	1987	113	16,578	16,364	1,760
	1988	125	17,733	17,545	1,906
	1989	134	20,958	20,923	2,088
	1990	135	20,577	20,551	2,213
	1991	150	22,085	22,000	2,430
	1992	156	25,624	25,890	2,703
	1993	164	25,073	25,231	2,794
	1994	165	26,107	26,464	2,872

Source: Central Statistical Office, Annual Statistical Bulletin, 1994.

Table 3. *Enrolment in Teacher Training and Technical Training in Swaziland, 1990/91–1993/94*

COURSE/PROGRAMME	1990/91	1991/92	1992/93	1993/94
Teacher Training				
Males	331	413	536	440
Females	580	562	803	591
Total:	911	975	1,339	1,031
Technical & Artisan Training				
Males	769	772	981	935
Females	204	339	205	266
Total:	973	1,111	1,186	1,201

Source: Central Statistical Office, Annual Statistical Bulletin, 1994.

Table 4. Enrolment at Manzini Industrial Training Centre (M.I.T.C.) by Sex, 1992/93 -1996/97

PROGRAMME OF STUDY	1992/93		1993/94		1994/95		1995/96		1996/97	
	M	F	M	F	M	F	M	F	M	F
Agriculture	9	10	15	12	19	13	13	12	13	8
Building	22	0	19	0	19	0	22	0	23	0
Carpentry	12	0	17	1	20	0	22	0	19	0
Electrical	16	0	13	1	13	0	14	1	15	2
Mental work	19	0	17	0	19	1	18	0	18	2
Motor Mechanics	12	0	5	0	10	0	13	0	14	0
Panel Beating	8	0	14	0	20	0	0	15	0	15
Plumbing	4	6	7	7	6	8	7	10	6	11
Sewing	0	19	0	19	0	21	0	27	1	24
Spray painting	10	0	6	0	0	8	12	0	12	0
Upholstery	7	8	1	6	0	3	8	4	6	3
Totals:	142	44	132	46	159	46	168	55	165	52

Source: Manzini Industrial Training Centre, 1996/97.

Table 5. *Enrolment at the Swaziland College of Technology (SCOT) by Sex, 1996*

ROGRAMME OF STUDY	SEX	
	M	F
Association of Accounting Technician	20	29
Advanced Block Laying & Construction	10	1
Brick & Block Laying Craft	19	1
Carpentry & Joinery	19	1
Certificate in Secretarial Studies	3	26
Construction Plant Mechanic	17	2
Diploma in Automotive Engineering	34	1
Diploma in Bio-Medical Engineering	12	2
Diploma in Building Studies	42	4
Diploma in Commercial Teaching	33	22
Diploma in Computer Studies	12	3
Diploma in electrical Engineering	29	4
Diploma in Hotel and Catering	4	22
Diploma in Mechanical Engineering	33	0
Diploma in Secretarial Studies	11	35
Diploma in Technical Teaching	46	0
Electrical Engineering Technician	16	0
Higher National Diploma (HND) in Civil Engineering	16	0
Mechanical Engineering Technician	21	0
Motor Vehicle Mechanical	18	0
Motor Vehicle Technician	17	0
Plumbing Craft	20	1
Vehicle Body Repair Craft	15	0
Total:	465	153

Source: Swaziland College of Technology, 1996.

Table 6. Working Population Aged 12 and Above by Sex and Highest Level of Education, 1986

HIGHEST LEVEL OF EDUCATION	SEX	NUMBER	PER CENT
None	Male	22,196	19.06
	Female	6,851	5.88
	Total	29,047	24.94
Primary	Male	28,399	24.39
	Female	12,115	10.41
	Total	40,514	34.80
Secondary	Male	24,270	20.80
	Female	14,905	12.80
	Total	39,175	33.65
University	Male	1,722	1.48
	Female	1,048	0.90
	Total	2,770	2.38
Vocation	Male	2,283	1.96
	Female	1,729	1.49
	Total	4,012	3.45
Unspecified	Male	738	0.63
	Female	254	0.22
	Total	992	0.85
Grand Total:	Male	79,528	68.31
	Female	36,902	31.69
	Total	116,430	100.00

Source: Computed (by Akinnusi, 1992) from 1986 Population Census.

Table 7. *Distribution of Working Persons Aged 12 Years and Above by Work Status and Sex, Swaziland 1986*

WORK STATUS	MALES		FEMALES	
Paid Employee	68,859	(87.2%)	29,064	(79.3%)
Employer	324	(0.4%)	72	(0.2%)
Self employed	9,384	(11.9%)	6,982	(19.0%)
Unpaid Family Worker	364	(0.5%)	534	(1.5%)
Total:	78,931	(100%)	36,652	(100%)

Source: Central Statistical Office, Swaziland Population Census, 1986.

Table 8. *Percentage of Employment of Females by Industry, 1985-91*

	1985	1986	1987	1988	1989	1990	1991
Agriculture & Agric. Services	23.6	23.3	24.5	22.7	19.5	20.9	20.2
Forestry	16.5	15.2	13.1	13.5	13.6	23.9	17.6
Mining & Quarrying	4.3	4.3	4.8	4.7	6.0	7.1	3.9
Manufacturing	26.7	31.1	29.6	34.3	36.0	36.2	34.6
Construction	2.4	3.2	2.6	2.7	3.0	9.7	8.0
Distribution	43.2	41.9	42.9	41.4	43.8	41.6	45.3
Transport & Storage	9.3	9.6	6.1	7.5	8.7	11.0	10.8
Finance	37.1	32.6	23.2	33.2	30.7	24.0	24.5
Services	44.5	45.1	41.7	38.4	40.7	28.6	47.2
Total	25.5	25.4	26.2	27.2	27.2	27.4	28.7

Source: Central Statistical Office, Employment and Wages, 1991.

appear to have less access to, and less participation in, paid employment.

Employment of females in the private sector by industry is shown in Table 8. In 1985 the top three industries with the highest female employees were: Services, Finances and Distribution. By 1991 the top three industries were: Services, Distribution and Manufacturing.

Data in Table 9 show projected annual growth rates by sex. The growth rates for males and females are comparable in percentage terms through year 2016.

Table 9. *Projected Annual Growth Rates (GR) in Number of Economically Active Persons, Swaziland, 1986–2016*

Year	MALES		FEMALES		TOTAL	
	Number	GR(%)	Number	GR(%)	Number	GR(%)
1986	113,181	-	54,512	-	167,693	-
1991	135,730	3.7	65,250	3.7	200,980	3.7
1996	163,859	3.8	78,215	3.7	242,074	3.8
2001	198,610	3.9	93,947	3.7	292,557	3.9
2006	239,474	3.8	112,241	3.6	351,715	3.8
2011	286,853	3.7	132,594	3.4	419,447	3.6
2016	339,796	3.4	154,848	3.2	494,644	3.4

Source: Matsebula, 1993.

Notes: Growth rate (GR) was calculated (by Matsebula, 1993) Using the geometric growth formula.

Constraints on the Economic Participation of Women

Swaziland is characterized by a dual socio-cultural environment in many spheres including the economic and legal systems. The dualistic features permeate government, non-governmental and corporate activities. These features are characterized by the existence of traditional and western cultures. The co-existence of these two cultural orientations gives inherent contradictions to the disadvantage of women. Gender roles in Swaziland are clearly defined and permeate all forms of social, political and economic interaction. The gender roles are perpetuated, and indeed blessed by the traditional patriarchal cultural practices. For instance, women in

Swaziland "are perceived as care givers and home makers and not authority figures. Women in Swaziland have limited access to positions of power; they have insufficient mechanisms at all levels to promote the advancement of women; they have narrower employment opportunities, and they struggle to reconcile their economic activities outside the home with their traditional domestic roles" (Swaziland Committee on Gender and Women's Affairs (SCOGWA), 1996, p. 3).

Gender stereotyping in Swaziland is often reinforced by social and administrative structures and practices, including customary and statutory laws (SCOGWA, 1996). Gender relations vary as influenced by the roles women and men play in a given society. These roles evolve from socialisation and social behaviours that are learnt. Gender roles are different from sex roles, the latter being the biological, universal and unchangeable. "The conceptual distinction between sex and gender has raised a lot of curiosity in recent years, particularly in relation to its usefulness as a basis for analysing relationships pertaining to the male - female dichotomy" (Keregero, 1995, p.13). Sex refers to one's biological maleness or femaleness (Keregero, 1995) whiles gender refers to the cultural expectations for femininity and masculinity (Keregero, 1995). As Brett in Keregero (1995) rightly puts it, gender is socially and psychologically as well as historically and culturally constructed. In Swaziland the socialization of society requires that there be sexually discriminative roles, with some said to be for women and others for men (Economic Review Commission, 1995).

The Economic Review Commission (1995) reported four (4) factors that mitigate against the full integration and participation of women in the socio-economic development of Swaziland and these are highlighted below (p.89):

1. Lack of sufficient and appropriate education which has affected women's choice of formal work: More specifically, factors that have deprived women access to education are: (a) Gender roles, where girls and boys are encouraged by the institutions and instructors to choose subjects that will prepare them for their gender roles; (b) Teenage pregnancy, in the educational system that demands pregnant girls to be expelled from school; (c) Financial constraints, whereby, when parents' resources are limited and they have to choose the child who should not continue his/her studies, the girl child is the obvious choice to drop out of school.
2. Limited job opportunities for women in formal employment: Because of employer and societal attitudes, women are employed in low profile jobs relative to their male counterparts even if they qualify.
3. The legal status of women: There are laws that adversely affect full participation of women in economic development. For instance, some civil and customary marital laws reduce the position of women to a minority status in terms of marital power.

4. Cultural and traditional norms: The socialization process in Swazi society requires that there be sexually discriminative roles.

Gender and Intervention Strategies

Swaziland cultural heritage, although providing a unifying feature, perpetuates disparities between men and women particularly at the household and homestead levels. Certain elements of the culture pose as barriers to economic development. The subject choices of girls differ from boys at secondary school as a consequence of the gender stereotype inherent in the culture. Girls avoid taking science subjects, other than biology, because scientific careers are seen as "not readily accessible to women" (SCOGWA, 1996). In view of the continuing pattern of sex discrimination in the educational system and workplace, it is important that further initiatives be engaged to ensure that educational and occupational opportunities are available to every one. In vocational and technical education these strategies are used to reduce sex barriers. Burge and Hillison (1987) suggest (a) using role models, (b) strengthening internal locus of control and self concept, and (c) preparing for combining work and family roles (p.16).

In the context of Swaziland, strategies to ensure greater participation of females have been proposed by various interest groups and professional groups. Education has a major role to play in changing attitudes toward female involvement and participation in development. Learners', young and old, educational experiences influence their perceptions of appropriate gender roles within the context of the society as a whole.

Educansult Limited (1992) recommended strategies for increasing female participating in the economy of Swaziland. These intervention strategies are highlighted below:

- (1) Increase the number of women in high level and high profile positions;
- (2) Enable students to experience subject areas traditionally considered "off-limits" for those of their gender;
- (3) Appoint more women to teaching positions in subjects traditionally considered to be "male."
- (4) Appoint more men to teaching positions in subjects traditionally considered to be "female."
- (5) Conduct workshops for women teachers and women in senior/management positions to discuss career possibilities in management;
- (6) Support child care/crèche facilities.

The content and structure of the curriculum can contribute immensely to changing attitudes toward sex-stereotyping for better women participation in development. "One area in which the curriculum content can contribute to the diminution of gender-stereotyping is in home economics" (Edncansult Limited, 1992, p. 7-5).

In the report of the Economic Review Commission (1995), national economic development strategies were formulated for the improvement of the role of women in the country's economic development. Some of these intervention strategies have already been put in place and others are being discussed (p.91).

- (1) Creation of a Women's Affairs Department or Ministry to address all issues pertaining to the economic development of women in Swaziland.
- (2) Equal education policies and curricula be developed for both girls and boys who must be allowed to choose any subjects at school. Parents should be sensitized on gender issues such that they do not encourage traditional gender roles in their children's choice of subjects and occupations;
- (3) Marital power which hinders women's legal status should be reviewed to ensure equality of sexes and allow women access to resources;
- (4) All laws having the net effect of creating legal disabilities for women should be reviewed;
- (5) The "kukhonta" (land allocation) system should be changed so as to allow women direct access to Swazi Nation Land;
- (6) Appoint more women representatives in Parliament, Cabinet and other top public posts;
- (7) The practice of expelling girls from school following pregnancy should cease.
- (8) The Protection of Women and Girls Act should be enforced rigorously to deal harshly with all offenders.

These recommendations for the improvement of the position and active participation of girls and women in Swaziland point to the need for the development of a national gender and women's advancement policy. The policy will give direction in respect of gender equity and equality, and ensure improved allocation and optimum utilization of the limited resources.

Findings and Conclusions

This study indicated that gender-role attitudes related significantly to: (1) gender choice of subjects/programme of study in school/college; (2) selection of occupation, and (3) occupational roles in vocational and science education. Males and females typically follow the patterns associated with gender segregated division of labour. The findings of this study showed that women are confined to traditional domestic roles with no access and opportunities to high profile leadership and decision-making roles and responsibilities.

Access to, and participation in education and employment opportunities by females is constrained by traditional gender roles within the many-faceted sociopolitical, and cultural barriers to attitude change.

In Swaziland the division of labour between the sexes is based on the gender role stereotypes originating with family and other social institutions. The feminine stereotyped jobs follow the same patterns as women's traditional tasks at home. The female jobs are often related to service and care of others and teaching. The traditional male intensive jobs include management and leadership positions. Sex segregation is linked to quality jobs with the men's occupations providing more socioeconomic power and higher pay.

In the Swaziland context it is easier for females to accept the traditional occupational choices stereotypical of one's own gender than to choose the alternative that can 'shake self identity'. One explanation to this situation may be based on the viewpoint that visible and concrete attributes, such as gender, are built into one's self-concept and influence career preferences at an early age. The problem of gender stereotyping lies in changing attitudes as well as in removing the unconscious behaviours that remain even after the attitude has changed.

Recommendations and Implications

Identification of barriers to access to programmes is important. Further, it is of significance to be able to demonstrate the benefits to individuals and society of a programme built on equity premises. It is difficult, without the evidence regarding benefits, to show that processes and barriers have changed.

In order to change traditional attitudes to more egalitarian ones, content can be designed that focuses on promoting gender equity as part of preservice vocational teacher education. Further, inservice teacher education, systematically and regularly, should include content regarding chang-

ing gender-role attitudes and gender stratification in worklife.

It is important that intervention strategies be put in place and enforced to enhance persistence of individuals in non-traditional programmes and occupations. These strategies should work to ensure equal treatment and effective outcomes. Intervention programmes that have begun need to be continued, and new ones should be designed to meet the needs of particular client groups. In both existing and new programmes, documentation is critical to provide evidence of changes made by these interventions.

With more women entering the workplace, there will be a need for further reconstruction of work and family life roles such that women and men can participate fully in both work and family systems. As such restructuring occurs, both males and females will need equitable workplace and family life preparation in order to improve the quality of their lives. Vocational teacher education has a role to play in providing preparation to allow persons to make informed decisions about the opportunities available to them.

There has been an increase in women's employment in Swaziland that is linked to a broadening of the service sector of the economy. However, to further provide equitable opportunities for non-traditional participants in the educational community and the workplace, it is important to develop research agendas that facilitate entry, regardless of sex, into all occupations and family roles.

Females may have equal access to vocational education if the institutional atmosphere, the curriculum, the teacher-learning processes, and most importantly, teacher behaviour, are to be conducive to females equal participation in education. The process of assimilating females into the mainstream of development is a slow one. The barriers to the process can be the attitudes of males as well as those of the females themselves.

It will take a long time before age-old beliefs, customs and traditions which dictate that females have to take the back seat particularly in matters outside of the home and family, can be put to rest. It may even take a longer period of time before the concept of gender partnership, let alone gender equality and equity, is fully accepted by both males and females.

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INTERSECTORAL APPROACH TO LITERACY AND VOCATIONAL EDUCATION AND TRAINING: THE CASE OF THE SUDAN

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Introduction

Sudan is the largest country in Africa with an area of 2.5 square million kilometres and 200 million feddn (1 feddn = 2400 metre²) of good agricultural land and only 20 million feddn is actually utilized for agriculture. Sudan is composed of 26 states with 25 million people (1993 census) and growth rate of 2.8 %. There are many sugar cane, textiles and seed oil manufacturers. Recently, the country is hoping to produce oil and enrich its economy.

In spite of its potentials, the country is facing major economic drawbacks which have greatly affected most of the formal and non formal sectors. Regarding the education sector, the government has set educational policies to ensure better human resource development. The educational policy conference held in 1992 recommended that general education be divided into two levels:

- a) Basic education, starting at age six going through grade eight.
- b) Secondary education with multi-sections such as academic and vocational which is for a period of 3 years.

Due to the high illiteracy rate in the Sudan (59 % among males and 80 % among females), the Higher Council for Adult Education was established at the Ministry of Education in 1967. The adult education curriculum has undergone many revisions and changes to improve the attendance rate of the adult education classes (ILO 1987, 1988).

Recently a pilot project was established in an intersectoral collaboration approach between the Ministry of Education (MOE), Ministry of Labor (MOL) and the Ministry of Social Planning (MOSP) to eradicate illiteracy and equip adults with the skills needed to improve their standard of living. Therefore, the purpose of this paper is to highlight the above mentioned joint venture which can be a great opportunity for literacy and VET.

Theoretical Framework

The crucial importance of human resource development as a prerequisite for socio-economic advancement is no longer a debatable matter, because as we all know, development which is ultimately for the welfare of the mankind, cannot be attained without participation of trained human resources.

None the less, it is our impression that despite policy statements and elaborate planning, vital areas of human resource development are sometimes neglected. For example, it has become fashionable in some developing countries to emphasize high manpower development to the neglect of the more fundamental vocational training. It is assumed that such a mundane type of training will more or less take care of itself.

In the Sudan the public effort in the area of vocational training falls far short of the requirements for development. Vocational training was taken to mean any systematic training which aims at providing the skill and knowledge required for employment in any trade or craft in any field of economic activity. It is usually carried out in a specialized training institution separate from the work place. It is in this last respect different from apprenticeship training.

On the other hand, adult education programs were meant to enable those illiterate adults who missed the opportunity for formal education to attain a level of basic literacy. Such programs were not appealing to many who were engaged in the labour market to earn a living. With the advancement of technology and communication skills all over the world, it is a must that people be literate and have better training skills. Therefore, such a pilot project can be a reality on a large scale basis to solve the problem of thousands of men and women in the Sudan in regard to literacy and VET. Moreover, other countries with similar situations can benefit from such a venture.

Objectives of the Venture

The educational philosophy aims at maximizing the efficiency of the adult education programs to reflect economic and social returns. Accordingly, the National Council for Adult Education has established for adult education programs to eradicate illiteracy and at the same time to ensure the provision of occupational skills, agriculture and rural extension skills and women's development.

To develop suitable curricula, a detailed knowledge of the target group was gathered. This furnished the base for the design and composition of various parts of the curriculum. The target group was divided into four categories:

1. The framers
2. The industry labourers
3. The employee of social services
4. The housewives.

The general objectives of the four programs are to:

1. Upgrade the literacy skills of the four target groups in regard to reading, writing and numerical skills to qualify those skills of students at the 4th grade of the formal education.
2. Provide the workers in each group with technical knowledge related to their occupations with emphasis on practical training to improve the quality and quantity of their production.
3. To simplify the scientific knowledge related to their occupation.
4. To develop positive attitudes among the target group to enable them to be productive citizens.

The objectives of each program are as follows:

1. Objectives of the agricultural program
 - 1.1 Enlighten the learners with the various agricultural and animal resources in the Sudan.
 - 1.2 Enlighten the learners with the importance of agriculture and animal production for the Sudanese economy.
 - 1.3 Provide proper agricultural and animal rearing skills for the learners.
2. Objectives of the industrial program
 - 2.1 Enlighten the learners on the importance of developing the Sudanese economy via production increase and knowing their rights and duties.
 - 2.2 Develop their skills in avoiding risks of occupational injuries.
 - 2.3 Enlighten the learners with the pillars of the Sudan economy and the importance of the industry for the country's economic development.

- 2.4 Provision of practical training skills in industries such as sugar, leather, textile, and oilseed and soap industries.
- 3. Objectives of the social services program
 - 3.1 Enlighten the learners about the services provided by the government and their role to upgrade and ensure efficiency of provision of those services.
 - 3.2 Familiarize the learners about the role of each individual in regard to development, production, maintenance of public ownership services and self-help concepts.
 - 3.4 Enlighten learners about the role of groups, organizations, unions and cooperatives in the development process.
- 4. Objectives of the housewives program
 - 4.1 Familiarize women about their role in maintenance of the economy and social structure of their families.
 - 4.2 Provide women home economics and environmental protection skills.
 - 4.3 Enlighten women about the use of their leisure time in productive activities.
 - 4.4 Improve the triple roles of women (reproductive, productive and managerial).

Procedures and Methods

A six month curriculum was developed by experts from the MOE and MOL. The curriculum has emphasized literacy classes and various vocational training skills which might be different for men and women and for the different parts of the country depending on raw material available in each part.

In the Sudan there is over 250 adult education centres run by the MOE. It was stated that about 68.6 % of adults age 14–45 years were illiterate. The illiteracy rate among women is 82.1 % (Abdel Halim, 1993). In those centres the Division of School Gardening and Nutrition Education Program (SGND) of the MOE is usually conducting training courses in nutrition and health education, farming, weaving, embroidery and handicrafts for women. Men receive instruction in irrigation techniques, reforestation, farming and development rural water supply. Women constitute around 42 % of the participants in the adult education programs.

The MOL with support from ILO and UNDP run over 50 youth training centres of which half are vocational training centres for girls. Moreover, girls and women who get enough training skills have the opportunity to get a loan to start a self-employed project.

The MOSP has over 135 training centres through out the country which provide training and services for the local communities and youth in nutrition and health education, income generation, commercial studies, and

home economics. Each centre has production and marketing units responsible for the upgrading of production and its marketing.

The centres are also providing training in management of cooperatives, maternal and child health, vaccination and literacy training. Most programs are funded by UNFPA and UNESCO (Abdel Halim, 1993).

About 30 centres of the MOE and MOSP were selected as sites for the pilot project. The MOL provides technical assistance in term of workshop equipment and trainers. The program is fully supported by the government with an assistance from the ILO/UNDP fund.

Training for women is usually administered during the day while men's training is normally held in the afternoons. The program started by selecting 20 women and 20 men for the training in each centre. In almost all the centres learners were grouped into two categories: the farmers and the housewives (women are mostly unpaid farmers). Training is held 3 days a week for 2-3 hours a day with a total of 144-215 hours of instruction per course (6 month course).

Curriculum Design

A curriculum was designed to suit local needs and circumstances. It deals with areas such as target group specifics and tailoring the curriculum to the labour employment markets (for men) and fitting it into the social and educational setting (Schrofer, 1994). This will make it easy to assess the curriculum's practical application in different respects and to tailor it to the target group context.

In this respect, the curriculum was divided into three stages:

1. The principal (basic) stage:

To be covered with the first book accompanied by training manual for the trainer and aims at grasping the interest of learners to learn how to read and write in order to improve their occupational skills and develop socially and economically. By the end of this stage the learners ability to read and write will qualify at the second grade of the basic education level. This period usually takes 2-3 months.

2. The advanced stage:

In this stage a second book will be covered accompanied by a trainers manual. During this period the learner will master reading, writing and numerical skills taught during the first stage in addition to gaining new occupational related skills.

3. The monitoring stage:

Considered as complementary to the pervious two stages with the aims of:

1. Learners acquisition of in-depth technical and occupational skills.
2. Develop learner's skills in reading, writing, listening discussing and interacting in an educational setting.
3. Enable learners to value the importance of education in their productive life.

The curriculum for women has emphasized training in home economics, small scale industries such as shoe and leather making, food processing, animal husbandry, maintenance of agricultural tools and electronics, carpentry, plumbing and store making.

Teaching Methods

For each book there is training manual which explains how to approach each topic and the best method to handle it. Topics are usually presented as case studies of problems related to the occupation of the target group or their economic and social life. The teacher training manual explains the different stages for discussion of each topic in order to enable the learners to interact and solve the problem based on their local resources. Trainers are considered as resource persons to provide guidance and technical knowledge.

Findings and Conclusions

Both men and women have demonstrated high interest in the program as indicated by the large number of attendees (100 % enrolment) and the low drop-out rate which was less than 1 % in most centres compared to the normal adult education or youth training centres (enrolment is usually about 80-90% but drop-out rate averages 30-50 %). Training methods were found to be effective and suit the needs of different groups. Evaluation of the first cycle of the project has proven the success of such a venture. The sale of production from these centres can cover part of the expenses of running the centres. Moreover, the trainees themselves will have skills which help them to earn a living afterwards.

Obstacles faced the pilot program were related to the socio-economic and cultural conditions of certain target groups. Moreover, living conditions and ability to learn also acted as constraint on some of the target group. More information is needed on the target group context in order to develop a more realistic training course. Collaboration of the planning team can account for the various subjective assessments.

Other obstacles faced by the program were related to the high expense of establishing equipped centres and the presence of qualified trainers in the remote areas away from their families.

In conclusion such a venture with support from the different states and provinces and with the effort of the people at the rural council can be a

reality and expand to include more areas and benefit more people. The program can be adapted to the needs of the target group in each area.

Recommendations

1. It is important to involve the people themselves in the planning of the training program to ensure programs are compatible with the need of the adults in each area.
2. Training can be divided into basic training for the beginners and upgrading training for those who have the basic skills.
3. After the expansion of the project, those training centres can be production units for some villages and communities which enrich the market in those areas and neighbouring ones.
4. Utilize existing community structures for educational activities.
5. Increase enrolment opportunities via maximizing existing resources.
6. Promote positive expectations of return to education via provision of some vocational training.
7. Introduce joint programs and activities between the community and the training centres.
8. Revise the curricula to consider its relevance to the community environment and needs.
9. Create a flexible training time table.
10. Mobilize the international organizations and local NGOs with collaboration of community for provision of proper literacy and VET training.

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WOMEN'S EDUCATION IN THE SUDAN

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Introduction

Education is the basis for the economic, political and social development. Investment in education is always associated with successful economic and human resource development. Hence, is always linked to better income and productivity and improved standard of living.

Educated women in the developing countries contribute to their families well-being in term of education, health and improved nutritional status.

Sudan is the largest country in Africa with 2,500,000 square kilometres and a population of 25 million and annual growth rate of 2.8 %. There are many ethnic groups. Arabic is the predominant language with some indigenous languages as well. The country is divided into 26 states.

Despite the cultural variation among ethnic groups, the male-dominance ideology seems to be common among them. Women are considered of secondary status and as subservient to men. Their main roles are as wives, mothers and family care takers. Such perception has evolved as a result of the changing socio-economic situation, particularly the spread of education. Never the less, changes have not been planned and the traditional ideology is prevalent, constraining the educational opportunity and achievements of girls and women (El Nager, 1993).

Historical Overview

Historically, the culture in the Sudan had not favoured the education of women. During the Turco-Egyptian rule (1821–1884), women's education was totally neglected. When the Mahadia State in power (1884–1898) the emphasis was on political, religious and military activities rather than social services (Abdel Halim, 1993).

During the British administration (1898–1956) things were not much better than before. The British administrators were reluctant to educate women in the Sudan with an excuse that women's education will be against the Sudanese norms, traditions and religions.

The first primary school for girls was established in 1907 by Sheikh Babiker Badri- who worked as a government official in the Ministry of Education during the period 1902–1929. He started the school with his daughters and neighbours and named it Ahfad Primary School for Girls¹. The first government primary school for girls was established in 1920 by the British administration in Omdurman (the national capital of the Sudan). Since then the development of women's education has progressed slowly.

In 1939 the first intermediate government school for girls was established followed by the first government secondary school in 1945. By then the Ahfad primary school had developed from primary to intermediate level and in 1953 it became a girls secondary school.

The first Sudanese girls entered a higher education institution was in 1946 (Gordon Memorial College) which was established in 1928 as a post secondary collage for medicine and has developed now to become the University of Khartoum (Hall & Ismail, 1981).

The development of education remained very slow until independence. At that time there were few elementary schools in the Northern parts of the country and especially in the Urban areas (mainly Khartoum). In the South, some schools were established by Christian missionaries.

During the colonial period, the curricula remained male-based due to the colonial policies. The curricula and program content of girls education were of lower academic standard and focuses on home-craft and needle work. This has affected very much the social attitudes and views regarding women's positions, mobility and roles. The preference for early marriage has affected womens' educational attainment at that time. Many of those who attended school didn't complete the primary level due to early marriage. Consequently, by independence the illiteracy rate was very high and the gender gap in education was significant, with very little change in social attitude towards girls education (El Nager, 1993).

¹ Ahfad means grand sons

Post-Colonial Development of Education

After independence, there were some changes resulted in the introduction of the technical education at the secondary level. During the military regimen (1969–1985) a new system of education was introduced. Students have to spend six years of primary school followed by three years of intermediate school and three years at the secondary level before they can enter a higher education institute. A separate council for higher education was established.

Almost all primary schools are provided by the government except for few private government supported schools. In many of the regions and remote areas about 28 % of the girls and 31 % of the boys are attending co-education primary schools due to the small number of students at the village level.

Since independence, the number of primary schools for girls has increased to constitute one third of the total number of primary schools. Girls students at the primary level are about 32 % in 1969 compared to 18 % in 1956. There was a reasonable expansion of the educational system during the 1970s followed by a slowed down period during the 1980s (see Table 1 and 2). The number of schools and students during the 1970s are double of the number during the 1980s. By 1990, the increase in the number of students was only about 33 % (see Table 3).

Table 1. *Girls' Enrolment Ratios*

YEAR	MALE	FEMALE	TOTAL
1975	59	34	46
1980	59	41	50
1983	57	41	49
1984	50	41	49

Source: 1973/1983: UNESCO Statistical Yearbook, 1986.

Table 2. *Girls' Participation Rates*

YEAR	MALE	FEMALE	% OF FEMALE
1975	1,169,279	416,156	36
1980	1,464,226	591,173	40
1983	1,599,181	655,367	41
1985	1,734,468	702,000	40

Source: 1975/1983: UNESCO Statistical Year Book, 1986.

Table 3. *Number of Schools & Students for the Year 1970/71, 1980/81 and 1989/90*

Year	NO OF SCHOOLS				NO OF STUDENT		
	Boys	Girls	Co-ed	Total	Boys	Girls	Total
1970/71	-	-	-	3658	-	-	749049
1980/81	2483	1474	2070	6027	873054	591173	1464227
1989/90	2338	1797	3657	7792	1234064	871110	2105174

Source: (MOE) Educational Statistics; 1980/81 and 1989/90.

Girls education was furtherly expanded demonstrated by the number of students enrolled in the different states. This was clearly evident when comparing the intake for the year 1985/86 with the intake of the year 1989/90 (see Table 4). The gender disparity was clearly evident as seen from the percentages of boys and girls applicants age 7 years and 7-12 years enrolled (El Nager, 1993).

Table 4. *Percentage of Intake From Applicants Age 7 and (7-12) Years for the Years 1985/86 and 1989/90*

State	1985		1986		1989		1990	
	% of intake from population age 7 years		% of enrollment from population age 7-12 years		% of intake from population age 7 years		% of enrollment from population age 7-12 years	
	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Northern	92.6	99.0	84.1	93.7	97.8	100	79.1	71.9
Khartoum	66.4	83.4	76.4	91.3	73.2	75.5	70.6	71.9
Central	67.3	79.5	63.1	74.3	79.9	88	65.4	73.3
Western	37.4	57.6	36.4	52.1	39.9	61	38	46
Kordofan	33.5	58.0	33.6	55.9	57.0	82.2	41.9	61.1
Darfor	23.9	52.4	23.9	51.7	40.9	69.3	33.7	53.8

Source: (MOE) Educational Statistics; Different issues.

It is worth mentioning that within the country itself there is great variation between the states as well as between the urban and rural areas. Due to the absence of schools in some villages and the long distances between villages, girls are restricted from attending school. Despite the fact that more female teachers are available they are mostly found in urban areas as accommodation facilities are poor in some rural areas. The most advantaged group is the nomads. With the introduction of nomads education, the number of girl students has tripled in 1990/91.

In general, the primary school curricula is similar in all parts of the Sudan for boys and girls except for one subject which is the home economics for girls and the rural education for boys.

In addition, the Arabic language text books are emphasizing women roles as mothers and family caretakers. Moreover, women are portrayed as obedient, shy and weak. The primary school curriculum in general was criticized by the fact that it is not preparing students to be productive citizens. Primary school leavers are lacking marketable skills and hence remained unemployed in most cases.

Since the 1980s there was a shortage of educational resources such as books, furniture and social services. With the increased inflation rate and economic hardship of the country, education has become increasingly expensive. Poor families can not afford the uniform and transportation of their kids to school. School fees have added to the burden of the direct and indirect cost of education. Consequently, dropout rates have increased especially in disadvantaged states.

The Situation Analysis of Girls Education in the 1990s

A new educational system was introduced in the 1990s. The basic primary level is 8 years followed by a 3 years secondary level. The enrolment age was decreased to be six years. Although the National Comprehensive Strategy (1992–2002) has addressed many educational aims, programs implemented are not gender sensitive. There is persistence of gender gap in the gross enrolment rates. Net enrolment for females age groups 6–11 years and 7–12 years is still below 50 % (see Table 5). Even in the urban areas the percentage of female population age 8 years attending school is 68.8 % and 51.3 % for age 7 years attending schools (1993 census. p. 29).

Many factors has affected the low school attendance rate. Poverty and limited educational resources are the major contributing factors that constraint girls from attending school. Continuity of school is yet another serious problem particularly in the rural areas. Dropout rates are usually high at the primary level (see Table 6). Research for dropping out stated by the school leavers are lack of interest, non importance of education for girls, need for girls for house chores and early marriage. Teachers interviewed

Table 5. Enrolment Rate in Primary Education in Sudan

		GROSS ENROLMENT RATE	NET ENROLMENT RATE		
			Option 1	Option 2	Option 3
			Primary	(1-6 Grades)	Primary + Elementary (1-8 grades)
			Age Group 6-11	Age Group 7-12	Age Group 6-13
Both	Genders	75.1	44.8	53.4	54.8
Male		81.7	47.4	56.9	58.5
Female		68.3	41.8	49.6	50.3

Source: Calculated from the Fourth Census of the Sudan 1993 - Vol .3.

Table 6. Female Population not Attending School With Educational Attainment in Rural & Urban Areas

	RURAL			URBAN		
	6-9 years	10-14 Years	15-19 years	6-9 Years	10-14 Years	15-19 Years
Elementary / primary not completed	6,800 (1.2%)	46,680 (11.0%)	110,510 (22.7%)	4,110 (2.5%)	16,160 (19.9%)	52,180 (34.5%)
Elementary completed	-	20 (005 %)	40 (008%)	10 (006%)	-	1- (006%)
Primary completed	-	1,290 (30.0%)	24,140 (5.0%)	-	800 (96%)	15,350 (10.0%)

Source: Compiled from the 1993 Fourth Population Census Vol. 3-Table 38 p. 161.

stated reasons for the dropout such as the high cost of education, lack of school feeding programs, need for girls for agricultural and heading activities and sickness (El Nagar, 1993).

In the urban areas participation of young girls in the laborforce to assure their families. survival has encouraged many girls to dropout from school.

The Importance of Girls Education

From the historical overview preceded it is clear that the colonial policies created a system characterized by in-adequacies and inequalities. The post-independence policies continued to be male biased. However, the expansion in education has generated favourable attitudes towards girls education. This was reflected by the increasing number of girls enrolled in schools.

In a study done by the MOE, it was found that over 75 % of the parents surveyed has emphasized the importance of education for girls similarly as for boys. Parents perceive education as having positive impact on their daughters and qualify them for better life in the future (MOE, 1993).

Women are comprising half of the society, thus, they have a great role to play in the economic and social development of the country. Their direct impact on child development is evident. Moreover, they are productive in many fields such as agriculture and besides have a crucial social role to play in their communities.

Education for women in the Sudan has developed very much during the last two decades especially at the higher education level. The number of female students in most universities has increased (See Table 7). Moreover, there are institutions which are maintained exclusively for girls such as Ahfad University for Women, Sudan University College for Women and Ahlia university for Women in Wadmedni. Women compete with men to enter all the co-ed higher institution and have all the chances to enter the women's only higher education institutions (Eisa, 1996). Not only has the enrolment rate increased, but women have started to enrol in specializations previously dominated by men. The increase in enrolment in the Faculty of Engineering and Dentistry (see Table 8) can be attributed to the fact that women are free to choose the field of specialization they want with support from their parents (Abdel Halem, 1993).

Now days, women graduates are found all over the country, working in various professions. According to the 1995 UN Statistical Report on Women in the World, Sudanese women comprises 23 % of the labour force. Compared to every 100 man there is 2 women in high managerial jobs, 23 in secretary and office jobs, 27 in sale and services jobs, 53 in agricultural related activities and 13 in various productive related jobs (UN, 1995).

In conclusion, women's education in the Sudan is progressing very well. However, there is much to be done to remove the constraints that hindering girls education especially in the rural and remote areas. Policies and strategies should consider the dynamics of the different factors at the macro and micro levels. Strategies should aim at increasing enrolment rates, improving the quality of education and ensuring the continuity of girls in education.

Table 7. *Women's Enrollment in Institutes of Higher Education for the Years 1974/75, 1984/85, 1988/89 and 1994/95*

INSTITUTION	1974/75 %	1984/85 %	1988/89 %	1994/95 %
University of Khartoum	10.3	29.8	37.6	43.2
Islamic University	19.5	29.3	24.5	29.3
Juba University	-	14.5	13.6	25.2
ElNilin University	19.8	39.4	43.0	47.3
Sudan University	12.1	14.4	21.4	28.2
Ahfad University	100	100.0	100.0	100.0
Specialised colleges	53.8	46.0	28.1	35.9
Gezira University	-	26.8	30.2	36.3

Source: Department of Statistics, National Council for Higher Education, Khartoum, Sudan.

Table 8. *The Participation of Women in Selected Faculties at the University of Khartoum*

FACULTY	1974/75 %	1984/85 %	1994/95 %
Agriculture	4.1	40.1	46.2
Engineering	3.1	7.7	12.6
Medicine	9.6	31.2	46.2
Pharmacy	9.6	36.8	35.3
Veterinary Sciences	9.3	26.8	35.3
Dentistry	10.2	46.7	48.2

Source: Statistical Year Book, National Council for Higher Education, Khartoum, Sudan.

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RESEARCH DEVELOPMENT AND CHALLENGES OF THE 21ST CENTURY FOR VOCATIONAL EDUCATION AND TRAINING: CANADIAN EXPERIENCE

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Introduction

The increasing gap between the relatively slow pace of research development and the rapid multiplication of training experiences in vocational education and training could be harmful to the quality of such educative endeavours. This explains our interest with the role of research as means for meeting the 21st Century's needs in vocational education and training. Requirements of the quality and flexibility in workforce qualifications put a further stress on the role of research dealing with different aspects of education and training, such as: roles and interactions of actors involved, outcomes for the students and occupational teaching strategies. Along with authors who emphasize the necessity of research in vocational education and training, we first focus upon the characteristics of this research in order to contribute to better practices, such as: increasing recourse to multidisciplinary perspectives, developing a cooperative approach with practitioners in school, business and industry, intensifying collaboration and international comparisons to enrich each country's research. Then, we have a look on the development, in Canada, of strategic research networks in education and training as a way to increase the role of research in the improvement of training practices and we introduce briefly one of these networks working on the analysis of linking education, training and employment.

Role of Research in Vocational and Technical Education

Despite important progress realized during the last decade, scientific recognition of vocational and technical education and training research is much weaker than that of academic educational research in general. In many national or international scientific conferences on education, we note very few communications on vocational and technical education and training. Moreover, these are scheduled at a period of lower attendance such as the last day or mid-day of the conference. In Canada, some scientific education journals¹ have just started publishing articles on vocational and technical education and training. However, space allowed is often restricted. Some editors refuse such types of articles before having them reviewed because they are considered too specialized for readers.

However, politicians, decision-makers and analysts of socio-economic and educative questions recognize the strategic importance of developing and reforming vocational and technical education and training for the future of youth and workers and also for the economic development of societies (Conseil économique du Canada, 1992; Ministère de l'éducation, 1993; Commission des états généraux sur l'éducation 1996; Ministère de l'éducation, 1997; Marshall & Tucker, 1992). The vocational and technical education and training experiments must therefore be quickly increased and diversified. Furthermore, despite increasing research in vocational and technical education and training, this field of knowledge cannot easily improve practices because the gap persists and even increases between the creation of knowledge and the needs of innovative development in vocational and technical education and training. As a consequence, there is a lack of assessment of research results with regard to pursued objectives, a misknowledge of resistances and eventual hidden effects of some experiments and also a risk of repeating costly mistakes. Even though these aspects are studied, results are not necessarily used in reforms because they are unknown to practitioners or are not easily translated into practice. To meet the needs of vocational and technical education and training, research must provide attention to forms of cooperation with the different partners involved in collaborative research. That is why we approach new ways of practising research as a mean to meet the challenges of vocational and technical education and training for the 21st century. Based upon some Canadian experiences, we describe first the theoretical orientations and methodological aspects that should be promoted, then we present a Canadian experience of collaborative research in progress.

¹ We did not consider hard to find national or international scientific magazines dealing exclusively with vocational and technical education and training.

Theoretical Orientations

Vocational and technical education and training must, in the near future, comply with high quality and flexible requirements to satisfy the labour market expectations by developing intellectual dispositions, personal and social abilities as well as technical skills. As quoted by Deborah Meier, during an interview: "We need to do a lot better job of teaching students to meet deadlines, ask good questions, take initiative and set high standards for themselves – to take on a sense of responsibility for the work they are engaged in. If we do this we'll go a long way toward answering employers' complaints" (Dykman, 1997, p. 32).

Facing the actual and future development of workforce qualification needs, the research role is varied as it must study different aspects such as: considering the benefits of education and training for students, supporting teachers engaged in changing their practices, and paying attention to employers' expectations (Finch, 1993). Research is also required for the study of different processes in teaching occupational skills, such as: workplace mentoring or youth apprenticeship, cooperative education or alternance training and different types of work-based learning or school-based enterprises.

Stasz's review of the literature (1996) shows the importance of considering different conceptual approaches in the study of developing new skills in school and in the workplace. It is essential to add to economic studies especially aimed towards employers (Carnevale, Gainer & Meltzer, 1990), cognitive, sociological and ethnographic types of research focussing on the learner as well as on the teacher, study cognitive skills required in problem solving and to develop a sense of autonomy and organizational understanding, etc. Other works are also essential regarding the curriculum, pedagogy and strategies to overcome the resistance and disinterest of a large number of students to pursue their education and training after compulsory schooling (Raizen, 1994).

Critical research approach also contributes largely to the analysis of forgotten aspects by educational, governmental or employer organizations. We wish, as Lakes and Bettis (1995), that critic researchers appraise the links between economic situation and daily experiences of students, workers, teachers, supervisors and mentors, etc. It is also important for researchers to study students' personal knowledge, the impact of their education and training on the development of their professional and social identity (Hardy, Grossmann, & Mingant, 1997) and to analyze the students' cultural resistances towards proposed knowledge (Hardy, 1994) as well as modes of socialization conveyed by knowledge (Tanguy, 1991).

In order to face the challenge of vocational and technical education and training for the coming century, it becomes urgent to transfer research re-

sults to decision makers and practitioners involved in vocational and technical education and training. Comments and criticisms concerning researchers in education seem appropriate to researchers of vocational and technical education and training. We remember remarks made by some of the former presidents of the American Educational Research Association (Berliner et al., 1997). Among these, Larry Cuban is sorry about the lack of effort and organizational determination of researchers towards decision makers and urges the former to find the best way to transmit their research results so that they are well understood and most useful to potential users. John Goodlad regrets the lack of interest shown by researchers towards the concerns and problems felt by education decision makers and practitioners and invites researchers to engage in collaborative forms of work so as to pursue pertinent researches with regards to the needs of practitioners and decision makers.

Lack of satisfaction concerning the research role in education is also an important factor recognized in an OECD study on educational research and development. The authors acknowledge, in many countries, "the feeling of a confidence crisis in the value of basic knowledge created by researchers" (OCDE, 1995, p. 21). Based on a well supported diagnosis, OECD analysts come up with conclusions similar to those of Goodlad and provide a portrait of research far from the traditional type praised by a large majority of education researchers.

Strategies to overcome these structural problems may be such as to encourage researchers to get people working with them in order to fully participate in the conception and the undertaking of innovative projects that will be shared with their colleagues, ensuring a more efficient result diffusion. This conclusion is identical to that of Kirst and his collaborators (1991, p. 6) [who declare] "This also implies making research available for the improvement of teaching and school personnel. Teachers and researchers should be collaborators dealing constantly one with the other. This situation means to determine new roles for the teachers and students" (OCDE, 1995, p. 78).

Despite their disappointment concerning former research results, politicians, education and training practitioners as well as human resource development administrators entertain great hopes for educational research. They persist in their expectations of higher quality research, elaborated and planned in cooperation with those requesting it, in order to meet the needs of a constantly improving society.

Other researchers such as Floden (1996) and Sadovnik (1995) point out the urgency to develop, cooperatively, research and ways of diffusing research results which will help improve practices. Biddle (1996) insists on the need of increased funding to improve education through better channels of communication that will make available research results to school practitioners. He stimulates thinking by comparing the wide difference

between socio-economic resources invested into medical or spatial research, with regard to poor investments in educational research, especially at the level of transferring research results into decisions and practices.

Methodological Aspects

At the methodological level, recognition of the role and importance of research depends on the progress and diversification of research in vocational and technical education and training, on a closer cooperation between researchers and practitioners in school and workplace to improve practices and also on the improvement of international collaboration.

In Canada, as in other countries, many researchers argue that research progress is tied to the availability of research grants but those are decreasing. This position is partially fair but it ignores researchers' role to sensitize practitioners, analysts and policy makers to the positive effects of research on the improvement of practices. In spite of budget cuts, we are confident that an increase of high quality research proposals is an important factor to increase research credits. Incidentally, Canada lacks researchers who are interested in studying vocational and technical education and training in the long term.

It is desirable to conduct more diversified research. Researchers should also come from different disciplinary perspectives so that vocational education and training can benefit from methodologies and knowledge produced in study fields such as: psychology, sociology, ethnography, pedagogy, communications, educational technologies, school management, industrial relations, economy, etc. Representatives of these different fields must work together in an interdisciplinary and complementary perspective considering problems encountered in vocational education and training.

In order to increase its efficiency, this research has to be framed in a collaborative way by developing research partnerships with education and workplace practitioners. These partnerships help practitioners to ask proper research questions and sensitize them to the researcher's role in order to improve their practices and modify completely the relationship structure between researchers and practitioners.

Similarities between countries, conferred by the globalization of economy and technological development as well as the meager research resources offer further incentives to improve collaboration and international comparisons. The work of OECD (OCDE, 1992; 1994, OECD, 1994), and those of CEDEFOP (Cheallaigh, 1995; Melis, 1995) may provide parameters to these international comparisons. Their development is also stimulated by the works of the European Economic Community (Jobert, Marry

& Tanguy, 1995), the multiplication of international exchanges (Hardy & Maroy, 1995) and the production of the International Journal of Vocational Education and Training by IVETA (Finlay & Niven, 1996; Lasonen & Frantz, 1996). The Special Focus Issue on School to Work Transition (Mulder & Finch, 1997) is, for that matter, an important contribution for the development of international cooperation in vocational and technical education and training.

Canadian Experience of Collaborative Research

In order to increase research in vocational education and training and make sure that it will contribute to improvement of practices and also get ready to answer to the 21st century's challenges, the Social Sciences and Humanities Research Council of Canada (SSHRC, 1995) has set-up a strategic research program in education and training. Their objective was to select five strategic research networks regrouping researchers from different disciplinary perspectives and from several universities to work on some of the aspects which are most problematic in education and training in Canada. The aim of these networks is to help promote knowledge and improvement of practices by working with partners involved in education and training. These networks should also link to research performed on education and training at an international level. The five networks benefit from financial support during the next five years. They regroup 140 university researchers and 150 public interest groups involved in education and training, training centers, business and industries, representatives of different Canadian and Provincial Government organizations, school Councils (Government of Canada, 1996). We are the leader of the Research Network² selected in Quebec, regrouping nine researchers³. The network theme is: Linking education, training and employment: Analysis of the modes of cooperation between training partners, resulting organizational changes and outcomes for learners.

The network objectives deal with the research and the optimization of practice. Research objectives propose: 1) To describe the development of

² Five networks were selected in this contest, through Canada, one in Quebec, three in Ontario and another in Western Canada.

³ They are: Carmen Parent and Pierre Doray of Université du Québec à Montréal, Yvon Bouchard and Carol Landry of Université du Québec à Rimouski, André Dolbec and Lorraine Savoie-Zajc of Université du Québec à Hull, Dominique Bouteiller of École des Hautes études commerciales, Université de Montréal and Diane-Gabrielle Tremplay of Télé-Université.

various modes of cooperation between education and training partners; 2) To differentiate the roles, relations, interactions and modes of cooperation experienced by education and training partners of school organizations and those of the workplace; 3) To differentiate in these cooperations, the dynamics of change, the forms of resistance and to identify various effects on partners, organization wise, and on the type of delivered training; 4) To analyze the main outcomes for learners, and identify efficient conditions for these modes of cooperation. Optimization of practice objectives are reached by the following means: 1) To work in close cooperation with partners involved in education training and employment partnerships so as to take into account their structural and operational constraints, to discuss the dissemination of our research results and to prepare the broader dissemination of these results; 2) To set-up and realize, with our partners, the development of strategies so as to improve studied practices and identify modes and types of cooperation which will optimize education and training practices.

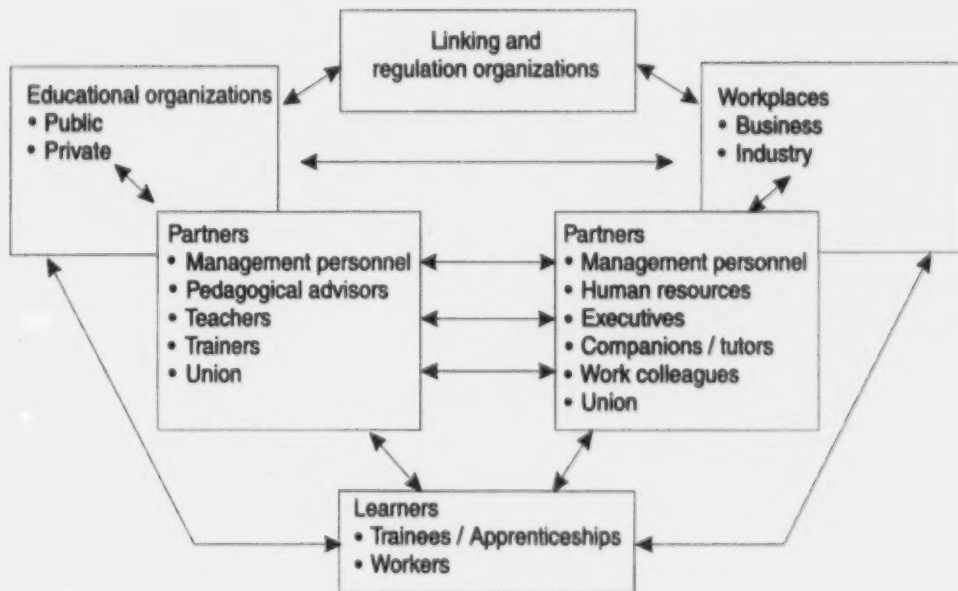


Figure 1. Cooperation Between Education and Training Partners.

To reach these objectives, we use a theoretical approach, as presented in Figure 1 above, in which the analysis of modes of cooperation between training partners borrows from a social system analytical model. We place a special emphasis on training milieus directly concerned with such cooperation, that is: local education and training organizations such as high

schools, colleges, private training firms and local workplace organizations or business and industry. They are in direct interaction and have developed relationships with education and training planning organizations. Modes of cooperation between training partners are scrutinized through the actors' role, through relations and interactions within each organization, with other organizations and towards the learners. We characterize education and training organization actors, workplace actors and socioeconomic organization actors. As for the learners they are represented by students, trainees or apprenticeships and the workers. We also analyze cooperation effects for the organizations and outcomes for the learners.

Our Network benefits from the cooperation of five international collaborators from United States and Europe⁴. We are also in communication with many other international specialists. The Network is made up of five teams of researchers who look at the different aspects of our theme, that is: 1) Partnership High School/Workplace; 2) Partnership College/Workplace; 3) Cooperation in ongoing education in business and industry; 4) Process of cooperation in education and training planning organizations. We actually benefit from the collaboration and partnership of 50 organizations among: vocational education and training schools, colleges, business and industry, unions, governmental education and employment organizations and social and economic organizations committed in education and training and employment relationships. The collaborative management part of the research is taken over by an Advisory Board for the whole Network and by a Project Committee in each of the different research teams. Besides the researchers, these different committees actually regroup 23 organizations and 29 active partners.

Cooperation between partners and researchers of the five teams progresses with the development of the research. The emerging work has created a lot of interest as more School Boards and Colleges ask to be partners in our network and governmental education and employment organizations wish to receive our research results as soon as they become available. We are working on setting efficient collaborations with the four other Canadian research Networks, selected by the Council, so as to increase the diffusion of results between researchers and also to practitioners. We want to add a substantial support to improve vocational and technical education and training to work towards the 21st century's needs. Till then, we must harmonize our conceptual approaches at the theoretical and methodological levels. We have to develop efficient collaborations with the practitioners at each important step of the research. Mutual exchanges are first

⁴The international collaborators are: Paul Bélanger of Institut de l'éducation de l'UNESCO, Claude Dubar of Université Versailles-Saint-Quentin (Paris), Curtis R. Finch of Virginia Polytechnic Institute and State University, Russel Osguthorpe of Brigham Young University and Sandra Pritz of Ohio State University.

taking place within each research site and they get pursued at each team level of the Project Committee and at the Network Advisory Board one. These cooperations have consequences on the choice of study programs and also on the choice of education and training strategies to be analyzed, on the application of methodological processes confirmed by researchers, on discussions of preliminary results. These collaborations must continue through the diffusion of research results which should contribute to the improvement of education and training of practitioners and their practices.

Conclusion

The growing importance of workforce qualification contributes to the development of various experiences in vocational and technical education and training. Besides, if vocational education and training is to reach its objectives, it is essential that society as well as the community of researchers give more importance to research, on the multiple aspects of this training, taking into account viewpoints of teachers and trainers and those of learners and employers. Even though employers are often the first to identify the types of qualifications expected, attention should be provided to other actors' viewpoints. Such an attitude is crucial in the development of human resources and becomes an efficient means to reach social and economic objectives.

Research in vocational and technical education and training needs not only to be developed by considering different viewpoints and by calling upon theoretical and methodological resources of varied conceptual approaches but it is fundamental that results of this research be transferred into practice. Such a concern with the use of research results by vocational and technical education and training policy makers and practitioners requires development of collaborative research at the beginning of the research and continuing through the dissemination of research results. A number of researchers need to substantially modify their ways of fulfilling their roles and their relations with people and groups with whom they work. We may even state that vocational and technical education and training researchers, as well as many researchers in education, are hereby invited to modify their research culture by changing their way of framing research problems as well as research objectives. These changes involve the valorization of research's social relevance by putting the accent on answering real needs starting with formulation of the research through modes of analysis and dissemination of research results. Knowledge progress is associated with the improvement of policies and practices and cooperation with partners involved. The problem under study becomes a major opportunity to convert the culture of the researcher and the research. Such an

association between knowledge progress and improvement of practices is promising for the development of the field of vocational education and training.

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THE BUSINESS INCUBATION CONCEPT: GLOBAL POSSIBILITIES FOR VOCATIONAL-TECHNICAL EDUCATION

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Introduction

The pervasive effects of global competition and the application of new technologies are rapidly changing the way firms operate in the world. Usually, the struggle to adjust to these changes is associated with large companies such as IBM, Motorola, car makers, and so forth. In the United States, the effects early this decade were represented by a decline in profits among Fortune 500 companies with a fifth of them showing red numbers (DeVries, 1993). However, we often forget that large companies are only part of the picture defining national economies. Both in rich and poor countries, small enterprises provide an economic structure that complement "big business" and fill in the cracks not served by these large companies. For instance, in the United States, there are only about 7,000 large firms if we define "large" by having 500 employees or more. In fact, reports on the state of the small business industry have indicated that the vast majority of all enterprises in the United States are small companies. Collectively, small firms provide employment to 56.5% of the American workforce and even in slow economic cycles continue to hire and train almost 90% of all new workers. New small firms are created or change ownership every year to the tune of about 900,000 including both new startup and "successor" businesses purchased by new owners (U.S. Small Business Administration, 1991, p. 22).

¹ Research reported in this study was supported by the National Center for Research in Vocational Education (NCRVE), University of California at Berkeley, pursuant to a grant from the Office of Vocational and Adult Education, U.S. Department of Education.

In the fast-changing business environment of today's world, small business are not immune to the effects of global competition as new demands trickle down the competitive pipe. To survive, new management styles and entrepreneurial skills are required to recognize changes and improve business performance (U.S. Congress, Office of Technology Assessment, 1990; Secretary's Commission on Achieving the Necessary Skills, 1991). But are our entrepreneurs prepared to survive under these demands? Not necessarily. The Small Business Administration (1991) indicated that approximately half of all new businesses fail within two years of operation. Reasons for such failure include: lack of planning skills, inadequate controls, poor management skills, inability to market products or services, and lack of skills to locate professional help when necessary (National Business Incubation Association, 1991). It is evident that technical and business skills are not enough to operate a business in today's economy. Entrepreneurial skills are also required to anticipate changes, identify opportunities, and create a high performance working environment according to the realities demanded by global competition (Eggers, Leahy & Churchill, 1994).

Further, young people interested in entrepreneurial opportunities flounder around in their quest to start a business for the lack of knowledge and career development support. Confronted with an uncertain future where jobs may be scarce or more demanding, 69 percent of American high school students said they would like to start a business, but 86 percent rated their knowledge of business or entrepreneurship as poor or "fair" (Center on Education and Training for Employment, 1995, p. 2). Also, individuals considering career changes or coping with unemployment may be interested in entrepreneurial opportunities to continue living a productive life. However, their technical "know-how" may not be enough to start a business.

The percentage of failures in the operation of new small businesses suggests the need to develop educational efforts to foster entrepreneurship as a new form of career development. The large percentage of high school graduates who flounder during school-to-work transition may also benefit from education and training that will provide them with an understanding of requirements, skills, and knowledge necessary to start and operate a business. Two-year colleges may be an ideal provider of such educational opportunities.

The traditional role of two-year public colleges has been to prepare students for continuing education and productive participation in the workforce. Postsecondary education offers a wide array of technical and continuing education programs serving the needs of established employers and the general public. Current trends both in the work place and global markets, suggest the need to reassess the role of postsecondary technical education to focus on a more active participation on community development

(Carmichael, 1991). Technical and community colleges need to expand their traditional conception of education and training, and include entrepreneurship and economic development as a comprehensive community endeavor.

Active participation in community development has been largely underestimated due to political implications, short-term vision, inadequate leadership, funding, management, and time considerations (Kopececk, 1991). However, when these obstacles are overcome, the benefits can provide a sustained framework for economic development. The call for action is timely and consistent with the principles underlying the school-to-work movement which focuses on integration of vocational and academic education, and enhanced linkages between secondary and postsecondary education, and integration of school-based and work-based learning opportunities (Hayward & Benson, 1993; Phelps, 1992; Rosenstock, 1991). Because of the historic development of two-year colleges across the United States, their widespread location, and their close ties with the community, this appears to be a suitable challenge for these institutions. The challenge will be to provide opportunities for individuals to explore alternative career paths or facilitate transition options from school-to-work or from work-to-business ownership.

Some states have already demonstrated the benefits deriving from participation of community/technical colleges in technical assistance and technology transfer to small business. In 1991, for instance, 144 community colleges sponsored assistance centers to small businesses (Carmichael, 1991). However, with more than 1,300 community colleges in the U.S., significant room for improvement exists. This contribution can also be complemented through partnerships with local industry to provide internships, scholarships, specialized training, and programs focusing on entrepreneurial development (Weinberg & Burnier, 1991).

Of these opportunities, business incubation offers, perhaps, one of the most comprehensive strategies to promote entrepreneurship, create jobs, stimulate economic growth, and revitalize rural areas or depressed neighborhoods. Business incubators, provide commercial space at low cost and a host of business services to help entrepreneurs survive successfully earlier stages of business development (NBIA, 1991). Business incubators offer opportunities to integrate education and training activities with focus on entrepreneurship, business, management, trade, and basic skills, and specialized training. Further, they serve as a vehicle to support local business development and jobs by providing consulting services and stimulating business alliances. Their goal is to nurture entrepreneurial talent and facilitate the development of new business ventures (Carmichael, 1991; NBIA, 1991; Weinberg & Burnier, 1991). However, in 1993 the total number of incubators sponsored or managed by two-year postsecondary institutions was only 25 according to the National Business Incubation Associa-

tion, which holds a membership of approximately 500 business incubators. Clearly, the current level of participation is rather low. Various strategies to work in partnership with community stakeholders, and the provision of additional services to employers, workers, and students are encouraging but still isolated.

The questions are whether community and technical colleges can revisit and implement an expanded role to prepare students for a productive school-to-work transition, help individuals ease the transition to business ownership, support the needs of the established local industry, and become pro-active players in the development of the community. Further, although business incubation is a rather familiar concept for those involved in economic development, this concept is peripheral to stakeholders in postsecondary vocational-technical education. Most studies in this area, if not all, are conducted by individuals and entities in the fields of economics, labor, and industrial relations and the connection with vocational-technical education is not that obvious for practitioners and administrators in postsecondary education. Thus, the purpose of this research was to examine the experience of entrepreneurs, business incubator managers, and postsecondary institutions involved collectively in educational and training strategies aimed at fostering entrepreneurship. The experience of entrepreneurs in business incubation – an environment where firms are to be nurtured and provided with opportunities to develop entrepreneurial skills – was viewed as an appropriate medium to gather insights about entrepreneurship, learning in real-world business environments, and the potential role of postsecondary institutions.

Method

This research was conducted using a survey approach. The survey was conducted in collaboration with the National Business Incubation Association (NBIA) to draw participation from their membership. Two surveys – one for business incubator managers and another for incubator clients – were developed within the total design of the study. As a complementary strategy to offset possible low return rates from the target population consistently reported in related literature (e.g., NBIA, 1991; Smilor & Gill, 1986), nine case studies were conducted representing urban, rural, and suburban communities, as well as different primary sponsorship, business incubation approach, and target clientele. The focus of this paper is on the survey study.

The definition of entrepreneurship used herein is characterized as the ability to “gather resources for creative and innovative purposes to meet needs or solve problems” (Goodman, 1994, p. 36) in business devel-

opment using knowledge of business techniques in conjunction with the application of a personal value system. That is, entrepreneurship involves knowledge about products, markets, and competitors embedded within a value system of persistence and motivation which together shape that intangible referred to as entrepreneurship. The business incubation concept is defined as an strategy to foster economic development through the provision of favorable conditions - commercial space and consulting services at low cost --to nurture the development and growth of new small firms. These conditions also include clerical and administrative support, basic office equipment, and counseling services to assist the development and survival of the new companies in business incubation (NBIA, 1991; Smilor & Gill, 1986).

Sampling

A two-step sampling procedure was used to gather data on managers and clients from business incubators sponsored primarily by two-year colleges, in comparison to two other types of incubators. The other two types considered in this study were incubators sponsored by universities and by a variety of other organizations in the community (e.g., economic development agencies, state and local governmental agencies). The first step involved the selection of business incubators. Members of the NBIA were the sample frame considered for the survey. The overall membership of NBIA reported in 1993 was 499 incubators located in the United States, Canada, and Puerto Rico (NBIA, 1993). Of these, only 25 incubators were found associated primarily with two-year colleges. Given the interest in this category and the small number of business incubators sponsored by two-year colleges, it was decided to include all of them and a proportional sample from incubators sponsored by universities (75) and other sources (100). Thus, the overall stratified random sampling process included 200 incubators representing 40% of the total NBIA membership. The second step involved a selection procedure of incubator clients. According to the NBIA (1991), the average number of clients per incubator was 12, with the possibility that none be in incubation (e.g., the incubator may serve external clients only). Based on feedback from NBIA executive staff a "convenient" sampling strategy was used targeting, initially, two clients per incubator for an overall target sample of 400 clients. To improve an expected low response rate (based on previous NBIA experience) it was decided to over-sample and send survey materials to five clients per incubator for an overall adjusted sample of 1000 clients. Incubator managers were the target contact respondents for the survey of incubator managers and to help facilitate the survey of in-house incubator clients.

Survey Instruments

Given the nature of the target population (individuals with busy schedules and high mobility), self-administered questionnaires including closed questions were developed. Survey instruments were developed for managers and clients with focus on the following areas: (1) Incubator services, (2) aspects of entrepreneurship and business development, and (3) demographic profile of entrepreneurs and business incubator managers. Questionnaires were pilot tested at one business incubator and further revised by a National Advisory Group. Based on this review process, questions were modified in terms of wording, deleted or added, and framed in different response scales (e.g., Likert scale, multiple choice).

Data Collection and Follow-up Activities

Anticipating a low return rate, follow-up mailings were scheduled 3, 6, and 9 weeks after the original mailing. All in all, questionnaires were returned from 45 percent of the initial target sample and by 40 percent of incubator managers. This is considering questionnaires which could not be delivered because some incubators were no longer in operation or had no in-house clients. The average number of clients responding per incubator was 2.16.

Analysis

The survey analysis included a comparison of initial and late respondents (i.e., those who responded as a result of follow-up activities) to identify bias associated with initial nonresponse and potentially biases on characteristics of the non-respondents. A comparison of both the demographic profile and responses of these two cohorts of respondents yielded basically the same results indicating these two samples were representing the same population. The analysis was conducted using basic descriptive statistics (e.g., frequencies, averages) to represent the response patterns of managers and clients for each question or sets of questions. Further, to account for the anticipated low response rate, a concurrent study was conducted to examine in depth nine promising business incubator programs. Case study findings confirmed survey results and are the subject of a separate publication.

Results and Discussion

The results and discussion are presented in two sections: Understanding entrepreneurship and entrepreneurial development through business incubation. Throughout the discussion, the role of two-year colleges is highlighted to build an outline for the implications on postsecondary education presented after the discussion of results. Percent figures are based on responses from 28, 71, and 61 in-house entrepreneurs from incubators sponsored by two-year colleges, universities, and other organizations, respectively. The overall number of respondents for the incubator client survey was 160. Similarly, percent figures of findings from the survey of incubator managers represent responses from 12, 36, and 26 managers associated with "two-year college," "university," and "other" incubators, in that order.

Understanding Entrepreneurship

To build an understanding of entrepreneurship, a profile of respondent entrepreneurs is presented to describe their personal characteristics, experiences, and perspectives on opportunities and limitations to start up and operate a business.

Background Characteristics. Overall ethnic representation was characterized by 88.2 percent Caucasian followed by small proportions of African-Americans (5.8%), Asians (3.2%), and Hispanic (2.3%) entrepreneurs. Native Americans were represented by only .6 percent of all respondents. In terms of gender, 77.1 percent of respondents were male and 22.9 percent female. Further, the majority of the respondents - roughly 60% - were between 36 and 50 years old, while the rest were either younger (20%) or older (20%). The majority of respondents reported an educational level described primarily by a 4-year college education (45%), followed by masters' degrees (25%), and Ph. D's (11.9%). These results provide additional evidence to support the predominance of male, Caucasian, middle-age entrepreneurs in business incubation over any other group. This pattern of participation is consistent across types of business incubators. The same can be said for the two other types of business incubators as well.

Entrepreneurs reported gaining previous experience related to the activities and operations of their current business primarily through hands-on work in school (23%), internships in similar businesses (23%), part-time jobs in related industry (17.3%), and mentor programs (14.1%). Business and technical experience appear to be further refined through work in industry and the corporate world (40%); and undergraduate and graduate studies (33.8%) for the majority of respondent entrepreneurs. The contribution of two-year technical colleges in preparing and supporting individuals entering the business world was negligible.

Opportunities and Limitations for Business Start-Ups. The majority of entrepreneurs indicated they were attracted to the business incubators because of the affordable business space and clerical support. Together, business space and clerical support accounted for 69.8 percent of the responses and almost identical combined responses were found across incubators. Not surprisingly, during earlier stages of business development entrepreneurs reported an unrealistic evaluation of their abilities to implement their business idea. The majority of respondent entrepreneurs, for instance, reported having everything under control with the exception of adequate financial support. In general, managers agreed that entrepreneurs come into the incubator with a well defined idea of their business but they do not usually have a written business plan and need help in developing one. Across incubators, managers agreed entrepreneurs face inadequate financing and lack an understanding of all the implications for business start-ups. These results were verified by personal insights of entrepreneurs and managers interviewed for case studies.

Provision of clear and well defined consulting services and the development of the business plan appear to be key to support entrepreneurs at early stages of their business operation. Further, although financing assistance is not stressed across incubators, there were a few instances where small programs provided seed money and complementary funds to government and bank loans to assist new start up ventures.

Surviving in the Business World. Entrepreneurs encounter a different set of problems once they get their business in operation after having developed and tested an idea. At this point the technical knowledge and a good business idea are not enough to guarantee success. Other elements of business operations such as business organization, personnel management, finances, marketing, and developing plans for expansion begin to hit all at the same time. Again, respondent entrepreneurs across types of incubators felt they were well prepared to handle all these operations but recognized the need for further education and training. Concurrently, managers agreed entrepreneurs require assistance on all these aspects of business operations. It is at this stage, where many opportunities for entrepreneurial assistance is required to help entrepreneurs make the transition from incubation to the outside world, to expand the business operation, or to cluster with other businesses in incubation or in the community.

Perspectives on Entrepreneurship. One school of thought in the field of entrepreneurship is that the intrinsic nature of it can not be taught. The suggestion is to not waste time on classes on entrepreneurship, ignore the business plan and market and global strategies, and focus on just one sale at a time (Sudikoff, 1994). Usually, a number of successful examples are given but those are anecdotal accounts equivalent to stories about someone winning the lottery. Another school of thought defines entrepreneurship as both born and made. As such, people who are exposed to entrepre-

neurship and the tools of the trade can reduce the risks of venturing in business and are more likely to succeed (Timmons, 1994; Goodman, 1994). That is, an entrepreneurial program may not be able to teach entrepreneurship per se but it can teach specific techniques and strategies which can complement the intrinsic character of this personal phenomenon. In essence, this thesis is central to the concept of business incubation. Survey results and personal insights gathered through case studies confirmed the value of this approach.

Surveyed entrepreneurs and managers agreed on the intrinsic nature of entrepreneurship but also recognized the complementary importance of business and technical skills, ability to gather information and resources for entrepreneurial purposes, and the interpersonal and cultural dimension. Overall, these characteristics were consistently identified across incubators:

Personal Characteristics. This is a consistent characteristic mentioned by survey respondents and by case study participants. About 16 percent of respondent entrepreneurs considered personal motivational factors as the most important element to succeed in business: The wish to be independent, take risks, and overcome obstacles found in their business career. The intrinsic ingredients of these personal characteristics also included a highly focused attitude of hard work, teamwork, and creativity to meet business goals. A majority of entrepreneurs interviewed for case studies realized the major limitation to starting and running a business was not the lack of capital or business skills but the personal drive and creativity to get ahead in business.

Technical Skills. This an essential component of entrepreneurship mentioned by entrepreneurs (14.8%) suggesting that one has to be technically competent to understand how to produce or deliver goods and services. It is obvious, entrepreneurs recognize that a certain degree of technical knowledge in their intended business field is necessary before attempting to become independent. Incubator managers did not rate this element as high perhaps because this is one of the least important reasons for business failures and because the need for further education and training is also not that high. The development of a business plan can also be used to identify areas that may require professional attention to reinforce the technical success of the business.

Business skills. Respondent entrepreneurs rated this aspect in proportion to other aspects (14.8%) in terms of importance. However, across all business incubators the majority of respondent managers (59.40%) were emphatic in giving this element of entrepreneurship a higher rating in comparison to other important factors (i.e., personal characteristics, technical and interpersonal skills). Evidently, the ability to maintain daily operations running smoothly – management, marketing, financial, decision making – is essential and entrepreneurs confirmed that this is the area where

they need help more frequently. Managers reported the lack of business skills is one of the most important reasons for business failures.

Entrepreneurial vision. This is another intrinsic characteristic which can be more closely associated with entrepreneurship per se. It involves a business vision to succeed, expand and grow but it also includes thinking skills, problem solving, and creativity which was mentioned as a separate category. For entrepreneurs the importance of entrepreneurial vision was about equally important to other aspects (14%). Respondent managers (20.8%) rated "entrepreneurial vision" in second place after business skills and further stressed that this is another important reason for business failures. It is clear that the creative utilization of information, services and resources available is perhaps central to the development and/or complement of an entrepreneurial vision.

Interpersonal skills. The ability to communicate clearly and effectively with clients, suppliers, creditors, and personnel is another area mentioned consistently across business incubators by respondent entrepreneurs. Managers rated this aspect as of moderate importance (8.5%) but recognized the lack of interpersonal and communication skills as a reason for business failures (15.14%). An opportunity to facilitate the development of interpersonal skills involves the informal synergistic dynamics occurring through constant interactions among entrepreneurs in business incubators, which help ease the business stress and provide for networking opportunities. Similar emphasis was given by respondent entrepreneurs in business incubation.

Entrepreneurial Development Through Business Incubation

How is business incubation facilitated by providers? This section describes various aspects of business incubation and perspectives of entrepreneurs and incubator managers on services provided by incubators with particular emphasis on education and training. The focus was on understanding entrepreneurial development through incubation experiences.

Business Incubator Managers' Background. The profile of business incubator managers conformed to demographic information reported previously (e.g., NBIA, 1991). That is, on average, managers were largely Caucasian (91%), middle-age (46 year old), male (70%) individuals who hold either a bachelor's or a master's degree (80.3%). This demographic profile was consistent across types of business incubators and revealed underrepresentation of minorities and women. Also, managers had a diverse background of previous experience in management and business and had been in their current position an average of 4 years. Across all incubators, only about 10 percent of the managers' previous experience was accounted by work in academic positions.

It is obvious the demands of the job across the board are on management expertise, building maintenance, and business consulting skills. The demographic profile and job focus may have implications for the lack of emphasis in targeting more minorities and women in business opportunities through business incubation. It appears that incubator managers are so busy maintaining the support of the incubator and involved in business maintenance that they do not have time to focus their attention in promoting entrepreneurship in the community. Under these circumstances, managers have little time for individual consulting services.

Incubator managers recognize this situation and would rather spend their time in direct consultation with clients (24.3%) and creating and maintaining external resources and networks (22%) to support business incubation. Successful business incubation programs get around this problem by allowing managers to devote their attention to these activities rather than on building maintenance and fundraising activities. However, this strategy involves additional staff and funding which may not be feasible in many instances unless there is strong commitment from the sponsoring institution. Given the dynamic nature of business incubation an active and focused management is a key consideration for a successful program where fostering entrepreneurship is the focal point.

The Role of Business Incubators. Overall, the contribution of primary incubator sponsors was characterized by providing business expertise (25.1%), commercial space at low cost (21.2%), and clerical support (18.5%) to entrepreneurs in incubation. Across incubators, only 17 percent of the budget was directly funded by primary sponsors which forces managers to be involved in fundraising activities, find ways to bring support and resources to the incubator, and get personally involved in building maintenance as described in the literature (e.g., NBIA, 1991). Managers reported that affordable commercial space (22.8%) and clerical support (17.8%) were the services they were providing most effectively to new entrepreneurs. The majority of surveyed entrepreneurs clearly appreciated these services and indicated they were the primary motivation to move into the incubator.

Even though managers claimed to be promoting entrepreneurship in business incubation through various services, entrepreneurs did not appear to be satisfied with the entrepreneurial aspect of their incubator regardless of incubator type. Again, it is obvious that unless managers have the time to spend in direct consultation with clients, the role of incubators gets reduced to providing commercial space and clerical support at low cost. Incubator managers suggested that having a clear business incubation concept and effective working strategies is essential to foster entrepreneurship in business incubators and the community.

Perspectives on Education and Training. Education and training activities were moderately emphasized across business incubators, two-year college-sponsored incubators included. A fourth of respondent entrepreneurs felt

they had no need for education and training services. Entrepreneurs seemed to prefer direct individual consultation (30.1%) instead of formal and informal education and training services. Thus, although services in the form of seminars, workshops and a series of modules may be available at the incubator, attendance appears to be a problem.

One strategy to overcome this problem is to build a coherent and meaningful education and training program into the business incubation enterprise. Further, incubator staff must stress the importance of being prepared in various entrepreneurial aspects and use various techniques to reach and motivate entrepreneurs in and out of business incubation (see Hernández-Gantes, Sorensen, & Nieri, 1995b, for a guidebook of working strategies). Concurrently, the use of alternative materials and techniques (e.g., video tapes and interactive computer programs) may add flexible opportunities and self-paced instructional opportunities for entrepreneurs with time restrictions. According to survey results, this is an area that has not received adequate consideration across all surveyed incubators as reported by both incubator managers and entrepreneurs in business incubation. Further, the participation from educational institutions comes from primarily university faculty rather than two-year college personnel. Only in the case of two-year college-sponsored incubators the contribution of university faculty is absent and the participation of two-year college faculty increases to a rather modest level (about 15 percent contribution). The problems associated with using two-year college faculty may include scheduling conflicts, and higher fees due to college regulations on salaries (e.g., benefits, release time).

Conclusions

Survey findings are consistent with the literature on entrepreneurship. However, findings related to the participation of two-year technical colleges in supporting business incubation and the development of entrepreneurship are informative and helpful in understanding opportunities for participation in community economic development.

The profile of entrepreneurs is characterized by male, Caucasian, college-educated individuals. The intrinsic characteristics of entrepreneurs included five major properties: personal characteristics (intrinsic motivation, hard work values), technical preparation, business and management skills, capacity to utilize available resources and information to take advantage of business opportunities (entrepreneurial vision), interpersonal skills to communicate effectively with others and understand the social impact of business development. Entrepreneurs continue to enroll in business incubators seeking, primarily, affordable commercial space and cleri-

cal support until they realize consulting services and the development of an entrepreneurial vision may be more important.

The contribution of two-year colleges to the business and technical preparation of entrepreneurs is disproportionately low in comparison to the contribution of four-year colleges and graduate schools. It is obvious that two-year technical colleges are preparing individuals – in large part – for traditional employment, and neglecting preparation in entrepreneurship as another career path. It is clear there are a number of opportunities to improve services provided during start-up, survival period, and expansion and growth stages. Business and technical services, and access to information systems and technology are but only some opportunities to support entrepreneurs through their business development. Further, the utilization and development of a business plan appears to be greatly appreciated by entrepreneurs in business incubation and serves as a powerful tool for instructional purposes. Using the concept of a business plan may be helpful to develop a coherent sequence of courses with focus on entrepreneurship at the secondary and two-year college level where students can learn about authentic entrepreneurial experiences.

Easing the Transition to Business Ownership. Although two-year college-sponsored business incubators are supporting a slightly more diverse population of entrepreneurs in comparison to university-sponsored incubators, both management and in-house clients are predominantly represented by Caucasian males. Minorities and women continue to be disproportionately represented below their proportions in the general population as a whole, both as entrepreneurs and in incubator management positions. Participating incubator sponsors – two-year colleges included – appear to be providing primarily commercial space at low cost and clerical support to entrepreneurs rather than consulting services and strategies aimed at fostering entrepreneurship. Limitations in management arrangements (e.g., managers' spending considerable time in fundraising activities and building maintenance) seem to preserve the lack of focus on the broader mission of business incubators: to provide an environment conducive for development of entrepreneurship through consulting services and education and training activities.

Entrepreneurs and incubator managers recognized the need for education and training activities to help refine the original business ideas and complement the entrepreneurs' preparation as they start up and operate their business. However, entrepreneurs in incubation appear to be relying in direct individual consultation instead of taking advantage of education and training activities. Alternative strategies (e.g., self-paced instructional materials, computer interactive programs) to traditional formats for education and training activities are underutilized across all business incubators. Two-year community college faculty and staff are not as involved in education and training activities in comparison to university faculty who

contribute to a greater extent in these activities. Some problems associated with the participation of two-year college faculty were mentioned by managers interviewed for case studies. Facilitating release time to participate in flexible assignments as mentors and consultants may help to increase the participation of two-year faculty and staff in business incubation activities.

The Concept of Business Incubation: Global Possibilities for Postsecondary Vocational-Technical Education

What are the possibilities to connect postsecondary education with entrepreneurial development and, ultimately, influence community development? Based on this study and related literature, key components of a holistic approach to business incubation supported by two-year colleges are highlighted. Finally, the global possibilities for applying the business concept in other countries are addressed below.

A Holistic Approach

There is a need for two-year colleges to get involved in community development. Entrepreneurs reported gaining previous experience related to the activities and operations of their current business primarily through hands-on work in school, internships in similar businesses, part-time jobs in related industry and mentor programs. However, only a very small number of entrepreneurs indicated they had enough previous experience needed to explore, start up, or run a business and needed further education and training. In fact, only a small number of entrepreneurs indicated they had learned their business and technical skills in either high school programs or in a community/technical college. Two-year technical colleges focus on preparation for traditional work roles and contribute little to the awareness of and preparation for entrepreneurial opportunities through coursework at various levels (e.g., certificates, associate degrees). Clearly, two-year colleges could fill the education and training gap through a comprehensive community development approach grounded in entrepreneurial development. Emphasizing the integration of entrepreneurship content into technical curriculum or as separate complementary or elective coursework can enhance the participation of two-year college participants in community development. Leadership in creating a holistic approach to community development with focus on entrepreneurial development must involve key stakeholders in the community as well as relevant government agencies with clear and long term goals in mind.

Business incubation is not about facilities; it is about entrepreneurial development. The business incubation experience should be about nurturing entrepreneurial talent. The vision for establishing business incubators should be clear in using low-cost facilities and business services as a means not an end to entrepreneurial development. Two-year colleges should provide a management infrastructure that allows entrepreneurial development to blossom. Soon into the business incubation experience, entrepreneurs must realize the value of the incubator is not in the low rent but in the opportunities to develop a powerful understanding of how to best operate a business.

Make education and training an intrinsic part of the business incubation experience. A valuable business incubation experience should include an ongoing education and training program. Tenants or students enrolled in entrepreneurial program can participate on a coherent series of modules or be able to benefit from flexible formats and schedules so they can participate as needed. Ideally, tenants should be made aware of all education and training opportunities available to them and required to enroll in at least a coherent series of modules addressing important topics to run a business. A program of education and training should resemble business-oriented consulting services where tenants know exactly what they are going to get, duration, how much they need to pay, and expected results. All along, with the understanding that staff will be available to support them all the way in their quest to succeed in business. A focus on low-rent facilities and clerical support should be avoided.

Provide participants with opportunities to develop an in depth understanding of "all aspects of the industry." Integration of entrepreneurship into curriculum linking school and incubator-based experiences needs to provide opportunities to learn "all aspects of the industry" and the new competencies demanded in high-performance workplaces for both entrepreneurs and students interested in starting a business. Two-year college programs linking school-based and business incubation experiences should also provide in depth understanding of how the business world works by facilitating the interaction with peers with different backgrounds and expertise. The practical experiences gathered formally and informally in business incubation can spark synergistic connections useful in developing shared understandings of all aspects involved in establishing and operating business.

Add value to business incubators by eventually developing "one-stop" business community centers. Business incubators can become the focal point in the business community when services are added and the quality of education and training is established. For entrepreneurs, business development centers housed in the incubator can add valuable resources to successfully maintain or expand a business. Procurement services, information on imports/exports, patenting, demonstration of common business

software, workers training, meeting facilities, and other added services can enhance the value and impact of business incubators in the community.

Use the business incubation concept to reach out to young people. Connecting opportunities with business incubators and businesses in the community for exposure and exploration purposes can be also extended to secondary students. Business tours, in particular, are being used to provide exploratory opportunities to secondary students in some communities (see Hernández, Sorensen, & Nieri, 1995a). As high schools move toward school-to-work programs with enhanced work-based learning opportunities for all students, mentoring opportunities with incubator clients (firms) and managers could reveal important perspectives for youth considering careers in small businesses. In some instances, business incubation can serve as a "real life" laboratory where young people can learn about business operations. Students can gain direct exposure, earn academic credit, and some income. Incubator and college staff can use these opportunities for consulting and instructional purposes as they work closely with participating students and entrepreneurs. Incentives for incubator firms may include tax write-offs for salaries paid to interns as well as access to committed and motivated individuals for temporary employment.

Global Possibilities

Entrepreneurs are all the same everywhere in the world. Even in the cases where they may be poor, entrepreneurial ideas can still grow in "penny economies" (Schultz, 1983). Either born to support, complement, or fill in the gaps left by large corporations in national markets; establish subsistence ventures (e.g., street vendors in metropolitan areas); or explore exporting/importing ideas, the need for entrepreneurial education and training is present everywhere in the world. Usually, entrepreneurial programs are associated with large corporations to support their leadership within their ranks. These programs may be somewhat expensive and delivered in metropolitan areas. The result is that only a limited number of entrepreneurs benefit from these programs. How do we bring these benefits to, for instance, mango growers who may be interested in exporting but who are located in the mountains of a South American country? Regional two-year colleges can bring these programs to where the people are and help them develop an understanding of today's business culture necessary to succeed in local, regional, national, or even international markets. Entrepreneurial programs complemented with business incubation experiences can prepare individuals for a productive life and contribute to community development. If programs are designed as part of a plan for economic growth intrinsically connected to workforce development, then entrepreneurship education may become a powerful means for promoting the competitiveness of individuals and communities around the world.

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IMPLEMENTING EDUCATION AND TRAINING POLICIES IN THE UNITED STATES: A CASE STUDY¹

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Overview

One day two United States senators who were playing a round of golf began to discuss national education and training policy. The first senator turned to the second and said "We really need to work on improving our national education and training policy." The second senator replied, "What policy?" This brief conversation captures the feelings many policy makers have about education and training policy in the United States. Some legislators believe that policy needs be improved and others contend there is no policy to improve. There are, of course, many legislators who have shaped quality federal and state policy over the years and they are to be commended. However, like it or not, education and training policy can be sorted into three distinct categories: the good, the bad, and the ugly. In order to keep from greatly offending anyone, discussion will thus be restricted to the "good" policy. Discussion of the topic begins with a brief description of several factors that can influence education and training policy. Then, a historical perspective on policy is presented with emphasis placed on vocational education. The focus then shifts to a case study of the Perkins II legislation. And finally, suggestions for the improvement of policy research are offered.

¹ This paper draws from and builds upon several related publications (Finch, 1997, Finch & Crunkilton, 1993, Finch, 1991, Finch & McGough, 1991).

Some Factors That Influence Education and Training Policy

Numerous factors can have impact on education and training policy. In order to provide a context for policy change, several of the more relevant factors are described.

The Needs and Interests of Individuals and Groups

Education and training policy in the United States can be affected in a number of ways (Finch & McGough, 1991, p. 20-21). Federal legislation is meant to reflect local community interests and needs. Since public education is largely a local responsibility and concern, community members have a vested interest in educational policy. Unfortunately, the legislative process requires that negotiation take place as a law is developed. Interested parties may not be fully informed of this process or may arrive at the "tail end" of negotiation too late to make a difference. Thus, proposed education and training legislation may end up only partially meeting its original intent and in doing so may not exactly meet the needs of the local community.

Interpretation and Transformation of the Policy

Once a law is passed, it must be interpreted and transformed into procedures and guidelines before it is implemented at the local level. Often this interpretation and subsequent transformation of legislative intent can change the legislation's impact. These changes in legislative intent may not be overt activities by a responsible government agency. Instead they are usually the result of unanticipated developments that arise during the interpretation process. Developments in the law's interpretation can result in further transformation in its original intent.

Reactive Versus Proactive Legislation

There is a continuing concern that most legislation is reactive rather than proactive. As a consequence, federal legislation is rarely seen as being very forward looking. A combination of the fast-paced growth and the slow democratic decision-making process that exists in the United States can combine to transform some potentially meaningful education and training legislation into knee-jerk reactions to major social and economic problems.

Legislation and Economic and Social Reality

Although legislators' hearts are in the right places, some of the laws they pass are not in touch with reality. The complex economic and social structure in the United States often calls for multifaceted solutions to extremely difficult problems. Legislators, on the other hand, may seek to pass legislation that consists of simple solutions to complex problems. Some legislators may have been removed from the public school arena since the time they themselves were students. Thus, the needs of education and educators may be addressed within this "time warp" mindset.

Vocational Education and Training Policy: A Historical Perspective

Education and training policy in the United States has existed in some form or another since the 1600's when people first began settling the "new world". These people brought with them personal feelings and viewpoints about education and training that were based on what had existed in many European nations for hundreds and hundreds of years. Policies that linked church and state in a number of European nations were viewed by these new settlers as being very restrictive. Their feelings about this area eventually lead to policy statements in the US Constitution supporting the separation of church and state. On the other hand, settlers viewed European countries' policies on apprenticeship in a much more positive way. From these European roots, formal apprenticeship practices established in the new nation were quite similar to those found in most European apprenticeship programs of that day. Other education and training policies followed. Of the various policies that were established in colonial (pre-US) and national history, the following serve as examples:

- 1647 – In what is now the Commonwealth of Massachusetts, each town with more than 50 households were required to employ a teacher who was charged with providing reading, writing, and arithmetic instruction (Scott & Sarkees-Wircenski, 1996, 80–81).
- 1785 – The Northwest Ordinance, which is considered by many as the first national legislation related to education, set requirements for dividing the Northwest Territory into townships with each township being required to set aside one section (one mile by one mile) for educational purposes (Ornstein & Levine, 1993).
- 1791 – The Tenth Amendment to the Constitution established as education a function of each state rather than the federal government and control of the schools thus belonged to citizens in each state.

With the advent of the US Industrial Revolution in the early 1800s, formal apprenticeship began a rapid decline. As Finch and Crunkilton (1993, p. 5) noted, "The great demand for cheap, unskilled labour obviously could not be met through apprenticeship programs, and many newly established industrial firms did not desire persons with such extensive training as was provided through the traditional learner-artisan relationship." This decline in the need for apprenticeship continued even as manufacturing began to become more sophisticated. However, as manufacturing production increased in complexity, factory owners and managers recognized a need for more highly skilled workers. This demand for skilled workers seemed to roughly parallel the rapid decline of formal apprenticeship programs in certain skilled areas.

During the late 1800s and early 1900s, technical institutes, trade schools, commercial and business schools, and agricultural high schools were established in an effort to better prepare persons for the increasingly complex workplace.

Although these schools did prepare people to be skilled workers, there was a great deal of inconsistency in the quality of their programs and thus their program graduates (Finch & Crunkilton, 1993, p. 6). By 1900, a rather strong national public sentiment for federal aid to vocational education had developed. As the Industrial Revolution continued to expand, the need for skilled workers increased. Rural America began seriously to question the relevance of traditional education and sought to have agriculture play a more important role in the schools. Industrialists and labour leaders believed that a new national policy could be the starting point to improve quality in preparing persons for skilled positions in the workplace. These feelings were formally presented to the federal government through national organizations. Groups such as the National Society for the Promotion of Industrial Education and the Association of Agricultural Colleges and Experiment Stations led the battle to obtain federal aid for vocational education.

However, the movement to secure federal support was not without controversy. Pressure to institute vocational education legislation in the United States stimulated a debate between those who believed public schools were places where only liberal studies should be taught and those who believed vocational education should be incorporated into the public school curriculum. The choice at that time was "whether schools are to become servants of technocratic efficiency needs, or whether they can act to help [persons] humanize life under technology (Wirth, 1972, p. 1)." Charles Prosser, a nationally recognized vocational education leader, strongly supported the idea of social efficiency which contends that American schools should be reformed to meet the needs of a technocratic society. Philosopher John Dewey believed that the industrial education movement of the day had some positive potential but felt it should prepare the way

for a humane technological society, "a place where science, technology, and democracy would complement each other (Wirth, 1972, p. 3)." Dewey closely monitored the movement, examined the proposed legislation and spoke out against certain of its aspects. For example, he opposed dualism which was in effect the separation of academic and vocational education programs. This was an idea that Prosser strongly supported.

Eventually, legislators supported federal legislation that would provide each state with financial assistance in the establishment of vocational education offerings. The result of this effort was passage of the Smith-Hughes Act in 1917 (the first less than university level vocational education legislation in the United States). This landmark vocational education legislation provided federal funding in support of agriculture, trade and industrial, and home economics programs. Unfortunately for John Dewey, his adversary Charles Prosser ultimately became the primary author of the Smith Hughes Act.

Thus, the Prosser philosophy was firmly imbedded in the Smith Hughes Act and for almost 50 years related legislation remained virtually unchanged. Even though a number of different vocational education laws followed the Smith Hughes Act, the Vocational Education Act of 1963 was the first to reflect a significant philosophical shift from the 1917 legislation. Essentially, the 1963 Act stipulated a more comprehensive approach to vocational education and demonstrated for the first time a total federal commitment to funding vocational education. Subsequent legislation such as the Education Amendments of 1972 and the Education for All Handicapped Children Act (1975) further demonstrated the strong federal commitment to support vocational education and to maintain it with a dual system focus (Finch & McGough, 1991).

The Perkins II Legislation: A Case Study

Much important education and training legislation has existed in the US over the years, however, one of these laws is seen by many as having the greatest impact in terms of changing national education and training philosophy. Although largely unheralded when it was first implemented, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II) has caused federal, state, and local officials to consider how vocational education as a field should be changed to meet the challenges of the 1990s and beyond. Described are several details about the Perkins II legislation including its context, focus, and impact.

The Context for the Legislation

The educational "system" in the United States serves as the basic context for policy. In actuality, the US educational system consists of 50 systems or one for each state. Moreover, many of the administrators and governing boards for some 14,800 school districts across the United States appear to hold a different view. Since these school districts have by most other countries' standards a tremendous amount of local autonomy, K-12 educators in these localities do not necessarily attend to what state and national officials say should be taught and how it is to be taught. Depending on their particular governance structure (local versus state level), postsecondary community and technical colleges likewise may or may not be sensitive to directives emanating from state and national levels. This situation can be both a blessing and a curse for the implementation of an educational reform. One school district may take a proactive stance by implementing positive change long before it is generally recognized as being of value. Another district may be more reactive by choosing to lag behind everyone else in the implementation process or just taking a "wait and see attitude". Implementing educational reform across the United States can thus present tremendous challenges (Finch, 1997). As contrasted with centralized "ministry of education" models found in most countries, educational change in the United States relies primarily on federal and state money and mandates as incentives to affect change at the local level. Money is typically available for short time periods (e.g., one to five years) and requires states and localities to make significant financial contributions to the change. This "carrot" approach to implementing change can actually work very well but may cause change to occur more slowly and unevenly, thus resulting in some poorer school districts and community and technical colleges beginning to implement a particular change many years after the more wealthy ones have fully implemented change (Finch, 1997, p. 70).

In addition to decentralized educational governance, several factors have contributed to the current status of education and training in the United States. One factor that appears to have stimulated the need for educational change is concern about the declining position of the United States in the world economy (Finch, 1993). Over the past ten plus years, numerous reports have been published stating that the United States has been falling behind other countries in areas such as productivity, product quality, customer satisfaction, and economic growth (see for example Chartner & Rolinski, 1987). Most of these report recommendations have been targeted at schooling and/or the workplace and called for major structural changes and improvements. Concern about the need for these changes and improvements has resulted in (1) major shifts in the ways businesses and industries function and (2) implementation of national and state legislation designed to more formally link education and the workplace.

A second factor is the perception that education may not be meeting students' future work needs. As Gray (1996, April, p. 530) noted, in the United States during the next ten years "at least one-third of all graduates of four-year colleges will not find employment commensurate with their education. The outlook is even worse for those with graduate degrees." This situation, coupled with the dismal employment opportunities for high school dropouts and high school graduates who have not developed highly marketable talents, has caused educators, employers, and even entire communities to realize that formal links between education and the workplace are important.

Another factor is the growing view that schooling may actually be a contributor to economic development (Berryman & Bailey, 1992). However, before schooling can become a significant contributor, it must undergo major changes. Here is where vocational education enters the picture. Many educators and employers have begun to recognize that in terms of the sub-baccalaureate (less than university degree) labour market, education has neither met business and industry needs nor the needs of students who want to obtain good jobs when they graduate from high schools and community colleges. This recognition has enabled vocational education in general and school-to-work opportunities in particular to have more widespread acceptance among those who are in the best position to implement this reform (i.e., teachers, educational administrators, employers, community leaders, and policy makers).

Although these three factors have been major contributors to change in legislative policy, they are by no means the only ones. Policy research had major impact on what was eventually included in Perkins II. Built into the original Perkins legislation was an evaluation component called the National Assessment of Vocational Education (NAVE). This assessment was designed to examine the legislation, determine the extent to which it was doing what it was intended to do, and report the assessment results to Congressional policy makers. John Wirt (1991), who served as NAVE director for the original Perkins legislation, noted that many of the NAVE findings could be linked to what eventually became the Perkins II content. For example, assessment results supported the need to integrate academic and vocational education in the schools and to broaden the occupational focus of vocational education so content learned would be "applicable across a wider range of jobs and careers (Wirt, 1991, p. 429)". Other NAVE findings supported changes in the allocation of federal monies and restructuring the states' roles in determining spending priorities.

The Legislation's Focus

Formal federal recognition of the need for national emphasis on school-to-work transition originated with the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II). This legislation, which is grounded in the notion that the United States is falling behind other nations in its ability to compete in the global marketplace, reflects the evolution of federal support for vocational education. Among its various provisions, the Perkins II legislation offers the 50 states financial incentives to create and operate education programs that have as their goal producing workers who function more effectively and thus increasing United States competitiveness in the current and future international workplace. The Perkins II legislation ushered in a new era of preparing students to enter and succeed in the workplace. For example, this law shifted emphasis from reactive and rigid vocational education curriculum and instructional models to those emphasizing innovation, flexibility, and collaboration. In contrast with earlier laws that contributed to a wide separation between academic and vocational education, the Perkins II legislation supported the integration of academic and vocational studies. Also included in the Act were provisions for using Tech Prep to formally link high school and post-high school technical studies in creative ways. Since the legislation has placed educators in the position of being more proactive instead of reactive in the design and implementation of vocational education programming, it has provided them with many implementation challenges (Finch, 1997, p. 72).

From a policy viewpoint, the Perkins II legislation is most significant. For the first time in over 70 years, a major philosophical shift in vocational education legislation had occurred. A review of the Perkins II Act reveals that Prosser's philosophical beliefs such as social efficiency and educational dualism have given way to Dewey's philosophical views including the creation of a more humane technological society and providing schooling that focuses on collaboration in meeting students' technological and humanistic needs. As Jennings (1991, p. 18) noted, the Perkins II legislation was designed to assist vocational education in playing a leadership role through: "channelling federal money to programs that integrate academic and vocational education, targeting money more carefully toward programs that produce results, emphasizing programs that serve poor and otherwise disadvantaged people, and easing state regulatory burdens by pushing authority down to the local level." From a more pragmatic point of view, the legislation has required all educators to rethink what they have been doing for so many years, discover new ways to design more relevant curricula, and provide more meaningful integrated and articulated instruction.

The Legislation's Impact

Assessing the impact of any legislation can be a major challenge. Fortunately, since national assessment was also included in the Perkins II legislation, the assessment task has been made more manageable. Focus of the assessment centered on the improvement of vocational education programs, their academic and employment outcomes, the participation of students from special populations in vocational education, and educational funding and administration. The Perkins II assessment was conducted over a three year plus period with most information gathered from mid-1991 to mid-1993. This meant Perkins II was assessed fairly soon after it had been implemented and NAVE staff were thus unable to evaluate the legislation's long term impact.

What then were the results of the NAVE assessment? Findings of the 800-page report can only be summarized briefly (Office of Research, 1994, Lewis, 1994).

In terms of the condition of vocational education at the time of that report:

- Most secondary vocational education is still very traditional in both focus and operation.
- Resistance exists in the implementation of both integration and tech prep.
- Most school systems are trying to fit Perkins II reforms into their existing curricula.
- There is little evidence that vocational education per se improves graduates' earnings or employment status.
- Closer alignment between vocational education and the job market is needed.
- More students with special needs and fewer high-achieving students (both with and without special needs) are taking vocational courses.
- Vocational education appears to be stronger at the postsecondary than at the secondary level.
- Economic outcomes for postsecondary students are better than for high school students.
- Vocational education faculty members at both the secondary and postsecondary levels will need stronger academic backgrounds.
- The development of tech prep programs needs much more work.

Studies that were mandated as part of the assessment revealed that:

- Both academic and vocational teachers have enough common knowledge to begin integrating their curricula.

- Teachers should be better prepared to operate workforce preparation systems.
- There is little coherence among vocational courses.
- Students in vocational programs earn fewer academic credits than their academic counterparts.
- Qualified secondary students in occupational programs should be prepared to attend postsecondary institutions including four-year institutions.
- A number of factors can contribute to make a young person employable.
- Certain core high school academic courses (e.g., mathematics, science, English) yield better employment outcomes.
- High school general tracks should be eliminated and replaced with more academically-rigorous workplace-related education.
- Job-specific skill training should be postponed until postsecondary education.
- States need to take greater responsibility for restructuring of workplace-related education.

Although these findings and recommendations for change are presented in summary form, they touch on most of the shortcomings inherent in the Perkins II legislation and provide specific recommendations for change.

Implications

What implications does this case study have for improving policy research? In order to link the case with policy research, discussion centers on three areas: the need for change, the nature of change, and the impact of change. These phrases might parallel terms such as inputs, process, and consequences or outputs.

The Need for Change

Unfortunately, "policy" and "research" are not always mentioned in the same breath. A basic reason for the disconnect between policy and research is that research results seldom serve as a basis for determining whether an education or training policy should be initiated. When a new education or training policy is initiated in the United States its focus is not likely to be based on extensive research. This does not mean policy makers ignore research results related to the proposed area of change. Searches for research are conducted but typically much less relevant research is uncovered than

policy makers would like. This is a fundamental shortcoming of policy research; either too little research is done or it is completed too late to be of much value for policy decisions. A more proactive way to prepare for policy change is to view research and its implications for policy more comprehensively. One example of this approach is *Legislative Principles for Career-Related Education and Training: What Research Reports* which was prepared in 1995 by the National Center for Research in Vocational Education (NCRVE). This document proposes a set of comprehensive principles that can serve as a framework for new federal legislation. The principles are based on eight years of NCRVE research and collaboration with schools, colleges, and other agencies. Policy makers should consider this approach as an alternative to the reactive methods that are often used to gather information upon which to base informed decisions.

The Nature of Change

Policy does not exist without purpose. Applying this notion to policy research, it is important to determine what a proposed policy's purpose is before the legislation is introduced. Meaningful, focused research can then be conducted to determine the extent to which the purpose has been achieved. This approach is, of course, easy to suggest and much more difficult to complete.

The Impact of Change

In the United States, assessing the impact of policy has become a growth industry. It appears that the future of policy assessment is assured. The assessment of Perkins II is certainly a case in point. It took contractors millions of dollars and several years to complete their NAVE report. The study was well conceived, conducted, and written. However, what impact did the report have for future legislation? Its impact was less than had been hoped because it needed to be conducted very early in the legislation's life. Policy statements in the legislation indicated how and when the assessment should be conducted so there was no way the assessment timing could be altered. Thus policy dictated a start date for conducting an assessment that was less complete than legislators and the general public would have liked.

Concluding Comments

Can forward looking national legislation be implemented? Certainly it can; one graphic example is the Perkins II legislation. Can research serve a useful purpose in better informing policy makers about possible legislative alternatives? Of course it can; legislative principles developed by NCRVE that were based on years of research definitely have accomplished this. However, the question that remains unanswered is whether research and policy can in the long term be brought together in meaningful and productive ways. Comprehensive assessments such as the one conducted for Perkins II and the NCRVE legislative principles demonstrate that there is much potential for improving the links between research and policy. Perhaps in the future, federal legislators will take advantage of what has been learned to create education and training laws that are more sensitive to research as well as the authentic needs of their national, state, and local constituents.

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Asia

A STUDY ON THE DEVELOPMENT OF FURTHER EXTENSIONS IN VOCATIONAL EDUCATION AND TRAINING IN TAIWAN, ROC

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Introduction

Chinese Philosophy occupies a position in the oriental world comparable to that of classical Greek philosophy in the West. Chinese philosophy has had a dominating influence on the philosophical traditions of neighbouring cultures during the crucial formative period of their development. It has become an integral part of intellectual and social activity in both its parent and transplanted culture, setting a way that has endured to the present.

The history of Chinese philosophy, dated back to around sixth century BC, is often referred to as the golden age of Chinese philosophy. During this period, Confucianist, Taoist schools of thought successively emerged and enjoyed periods of great popularity. Confucius claimed that, when one walks along with two other people, one of them may serve as his teacher. Therefore, he would do the best that he could and at the same time correct himself and avoid doing the worst. Confucius also indicated that if one does not read books for three days, life would become boring. Another philosopher, Lao Tzu, has argued that whenever one lives, wherever he learns. This means that education has great power for people to improve their knowledge and life. Moreover, further extensions in vocational education and training has been a very effective and stable way for both youths and adults to obtain some skills and knowledge, so that they can promote themselves and create a brighter future for themselves. This paper will

describe the current status of further extensions in vocational education and training in Taiwan, ROC.

The Current Development of Further Extensions in Vocational Education and Training in Taiwan

Presently, the population of adults in Taiwan is about 12,800,000, of which 9,000,000 are employees. These people are the targets of further extensions in vocational education and training. Emphasizing the forming of further extensions in vocational education and training to improve the quality of employees are important policies for the government.

Institutions for Implementing Further Extensions in Vocational Education

Figure 1 indicates that there are three systems of further extensions in vocational education and training: (1) The educational system (2) The vocational training system (3) Others. Under the national manpower and construction plan, developed by the Council for Economic Planning and Development, most ministries and authorities will develop their own education and training programs. For example, the Ministry of Education is in charge of educational and supplementary training programs. The Employment and Vocational Training Authority is in charge of public training. The Ministry of Interior, Ministry of Economic Affairs, Ministry of Finance, Council of Agriculture, National Youth Commission, and so on, also play roles as public training providers. This means that there are multiple ways for institutions to promote their own manpower quality.

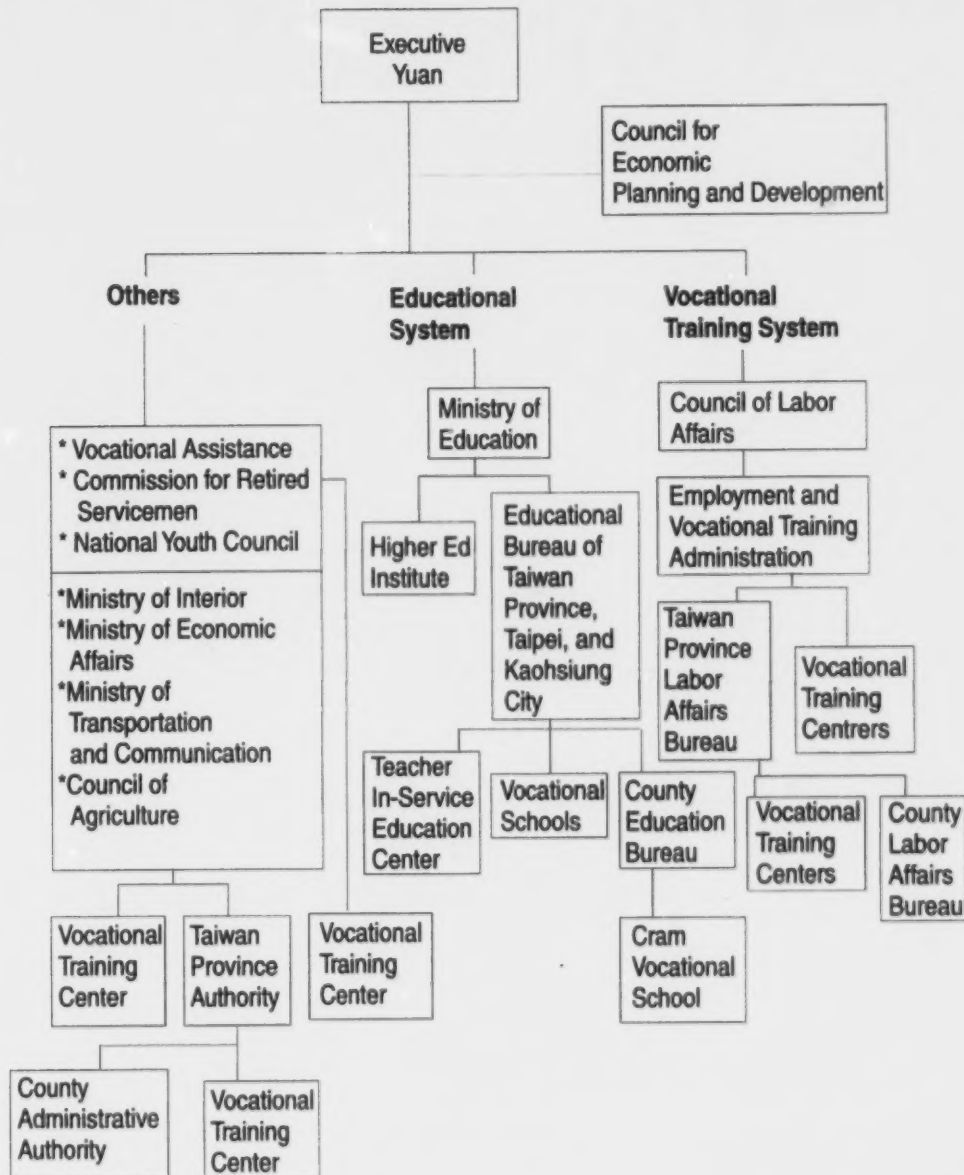


Figure 1. The Authorities for Implementing Further Extension in Vocational Education and Training (Wu Ching, 1996).

The Status of Further Extension in Vocational Education & Training

The Educational System. Table 1 shows that both secondary and post-secondary educational levels provide further extensions in vocational education programs based on different educational acts or regulations.

There are several different directions for a school to explore in opening further extensions in vocational education programs. First, they can offer a diploma or bachelors degree upon graduation from the extension department or evening division. Second, they can establish an affiliated supplementary school which shares the same resources and equipment with the original school and provide certificates or diplomas after graduation. Third, they can offer extensions in education courses with certification, which can be divided into credit courses or non-credit courses. In 1997, 15 Universities (70 departments) offered a bachelors degree for further extensions in vocational education for on the job training employees. For credit courses, schools would offer learners a bachelors degree after they had gained the minimum of credits and passed the entrance examination.

Furthermore, a short term cram school, which belongs to a private institution could also be a provider for further extensions in vocational education. Its main function would be to promote and enhance the practical techniques and productivity of employees. The duration of study time would depend on the content of teaching from one month to one year. These cram schools would provide certificates to students after they have finished their required courses. However, these certificates would not be equal to a qualification degree. Table 2 shows the statistics of further extensions in vocational education in the different levels of technological and vocational schools, and short term cram schools.

The Vocational Training System. The vocational training system in Taiwan can be divided into two subsystems: the public vocational training system- and the enterprise vocational training system. Presently, there are 13 public vocational training centers and institutions; however, these are insufficient in number and inadequately equipped for the manpower training. The government entrusts this type of training to subordinate institutions, schools, enterprises or associations. Table 3 provides details about the people who have participated in the public vocational training education in 1996 (Employment and Vocational Training Administration, 1991; Technological and Vocational Education Development, Ministry of Education, 1997; Economic Development and Planning Council, Executive Yuan, 1996a).

Table 1. *School Types for Implementing the Further Extensions in Vocational Education* (Ministry of Education, 1997)

SCHOOL TYPE	ENROLLMENT TARGET	SCHOOL YEAR	DAY(D)/ NIGHT (N)	CERTIFICA- TION
Vocational School				
• Supplementary School Classes	• Junior High School Graduates	3	N	Diploma
• Practical Skill Classes	• Junior High School Graduates	1-3	D/N	
• Night Classes	• Junior High School Graduates (OJT)	4	N	
Junior College				
• Supplementary School Classes	• Vocational Sr. School Graduates	3	N	Diploma
• Air Classes	• Vocational Sr. School Graduates	3	D/N	
• Night Classes	• Vocational Sr. School Graduates with at least one year of working experience (OJT)	3	N	
General University				
• Post 2-year Technical classes	• Junior College Graduates with at least one year of working experience (OJT)	2	N	Bachelor (started in 1997)
• Night Extension Classes	• Senior High School Graduates (OJT)	4	N	
Technology University / Institute of Technology				
• Post 2-year Classes	• Junior College Graduate with at least one year of working experience (OJT)	2	N	Bachelor
• 4-year OJT Classes	• Vocational Sr. High School Graduate with at least one year of working experience (OJT)	4	N	
Vocational School and Vocational Supplementary School	the public	1 year max.	DN	Certificate

Table 1. (continued)

SCHOOL TYPE	ENROLLMENT TARGET	SCHOOL YEAR	DAY(D)/ NIGHT (N)	CERTIFICA- TION
Junior College Institute of Technology Technology University Credit Class	Vocational Sr. High School Graduate	1 year max.	D/N	Certificate
General University Credit Class	General and Vocational Sr. High School Graduate	long or short term		Bachelor (15 Univ. started in 1997/9) Bachelor (complete required amount of credits)
Junior College Institute of Technology Technology University General University Non-Credit Class	the public	1 year max.	D/N	Certificate

Table 2. Further Vocational Extension Education Conducted by All Levels of Schools and Cram Schools (Ministry of Education 1997)

CATEGORY			NUMBER OF SCHOOLS	NUMBER OF STUDENTS
University Level	Degree Program	Post 2 Years in General University	18	3,070
		Post 2 Years in Institute of Technology, Technology University	9	3,937
		Institute of Technology, Technology University (4 Years)	3	1,336
		* Evening Program in General Univ. (4 Years)	15	4,550
	Certificate Program (Extension Education)	Credit Class	58	19,375
		Non-Credit Class	30	4,347
Junior College Level	Diploma Program	Junior College	67	45,019
		Junior Supplementary College	20	12,150
		Junior Air College	4	21,126
	Certificate Program (Extension Education)	Credit Class	25	4,320
		Non-Credit Class	13	1,244
Vocational Sr. High Level	Diploma Program	Supplementary Practical Skill	208	167,936
		Night Class	152	39,568
			11	5,403
	Certificate Program (Extension Education)	Vocational Sr. H. School & Supplementary School	182	26,440
Short Term Cram School			1,749	299,617

Table 3. *Public Vocational Training by Various Levels of Government*

CATEGORY	NUMBER OF TRAINEES
Public Vocational Training Institutions (Council of Labor Affairs)	13,205
County Vocational Training Institutions	5,103
Provincial and Other Ministries' Vocational Training Institutions	43,742
Total	61,870

There are three ways for enterprises to develop their own training programs. Firstly, for companies to handle inside training themselves. Secondly, for the setting up of affiliated institutions for training. Thirdly, entrusting the program to occupational associations, schools, or other institutions. Trainees can get subsidies if their occupation training programs conform with the government's training policies. The subsidies for trainees in 1996 amounted to NT\$30,000,000 (Economic Development and Planning Council, Executive Yuan, 1996b; Employment and Vocational Training Administration, 1996).

According to the survey of vocational training in 1996, there are 958 affiliated training institutions which have 441,955 trainees who make up 78.1 % of the population being trained, as indicated by Table 4. As Table 5 shows, for the educational degree, trainees who have graduated from college and university occupy 60 percentages. Table 6 shows occupational status, and reveals that about half (50.4 %) of the trainees are technicians and assistants.

Table 4. Training Conducted by Affiliated Training Institutions

CATEGORY	NUMBER OF INSTITUTIONS	NUMBER OF TRAINEES
Public Vocational Training Institutions (Council of Labor Affairs)	13	13,205
Public Sector Affiliated with Training Institutions	152	274,797
Private Sectors Affiliated with Training Institutions	539	76,920
Government (Ministries) Affiliated with Training Institutions	66	34,184
Schools Affiliated with Training Institutions	133	19,191
Union or Associations Affiliated with Training Institutions	55	23,838
Total	958	441,955

Table 5. The Educational Degrees of Trainees

TYPES OF SCHOOLS	NUMBER OF TRAINEES
Elementary School	6,369
Junior High School	18,235
General Senior High School	53,777
Vocational Senior High School	98,607
Junior College	142,176
College/University	122,767
Total	441,955

Table 6. *The Occupational Status of Trainees* (Ministry of Education, 1995).

OCCUPATIONS	NUMBER OF TRAINEES
Enterprise Executives, Administrative Staffs and Managers	36,790
Professionals	17,750
Technicians, and Professional Assistants	222,532
Service people and Salesman	12,361
Agriculture, Forestry, Fishery, Animal Husbandry	973
Clerk	88,180
Manufacture Workers, Physical Labors	63,568
Total	441,955

Table 7. *Training Hours*

TRAINING HOURS	NUMBER OF TRAINEES
< 43	209,340
43-84	155,109
85-170	53,735
171-500	21,343
501-1100	1,698
1101-2200	451
2201>	279

In 1995, the Council of Labor Affairs had done a survey which sampled 10,000 enterprises and 100,000 labourers in order to investigate the status of on the job training. It was found that 47 % of the labourers participated in OJT, of which 70.8 % were satisfied with the training.

Others. Other systems such as the departments in the Ministries of Economics, Finance, Agriculture, Transportation all offer vocational training programs. Some ministries run the training programs through their own affiliated vocational training center. While other ministries either run the programs themselves or they relinquish control to subordinate departments, schools, or vocational education institutions.

The Council for Economic Planning and Development, Executive Yuan declared that in 1996 these ministries gave 41,730 people further training through important policies made by the government, as indicated in Table 8.

Table 8. *Further Extension in Vocational Education and Training Conducted by Various Sectors in 1996 (Economic Development and Planning Council, Executive Yuan, 1996)*

MINISTRY	NUMBER OF TRAINEES	MAIN PROGRAM
Economic Ministry Affairs	73,934	Automation Technology, International Trade, Business Management
Finance Ministry Affairs	177,933	Finance
Agriculture Ministry Affairs	124,037	Agriculture, Forestry, Fishery, Restaurant
Interior Ministry Affairs	12,616	Construction and Civil Engineering
Others	19,210	Tourism
Total	410,730	

Further Development

Recently, due to the great progress in Taiwan's technology and society, the government has actively offered a variety of further extensions in vocational education and training. This movement has caused a great development to further extensions in vocational education and training which improves manpower quality and enhances productivity. However, there are still some disadvantages that need to be improved, which are as follows:

- (a) The further extension of vocational education and training are not ranked as high policy within the total system of education and vocational training.
- (b) Enterprises do not offer enough programs and sufficient funds to support the further extensions in vocational education and training.
- (c) Some of trainees are not satisfied with the curriculums, and the quality of instruction still needs to be improved.
- (d) To establish a system for further extensions in vocation training on employees' vocations takes time.

Due to the arising competitiveness encouraged within the nation and the improving quality of life, the government is developing the "Asia-Pacific Regional Operation Center Plan" which includes air cargo, sea cargo,

financial, medium, telecommunication and other categories. In order to achieve these goals, here are some suggestions, as follows (Economic Development and Planning Council, Executive Yuan, 1995; Economic Development and Planning Council, Executive Yuan, 1997):

Vocational education

- (1) To transfer the evening division program of the university into an advanced extension education program.
- (2) To increase the post 2 year program in the technological department of a university or college.
- (3) To promote the junior college into an institution of technology affiliated with a junior college program, and increase the post 2 year program in a technological department for OJT.
- (4) To enlarge the extension education program of a university or college and encourage some universities to offer bachelors degrees to extension education courses.

Vocational training

- (1) To enlarge the capacity of the training program in the public vocational training centers.
- (2) To encourage the county and local governments to offer further extensions in vocational training.
- (3) To encourage and help enterprises offer subsidies for employees in training.
- (4) To build up an life-long study system for employees' career development.

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NETWORKING BETWEEN BUSINESS AND EDUCATIONAL INSTITUTES IN TAIWAN, ROC

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The partnership between schools and enterprises in Taiwan's society is getting closer, moving toward the promotion of public interest and benefit. This partnership not only provides students an opportunity to put theory into practice, but also helps teachers to explore new technologies being applied in the enterprises, as well as infusing them with new idea, active vision and innovative thinking.

Enterprises participate within schools in many ways, involving themselves in school activities and also supplying subsidies. For example, the Ministry of Education often invites important representatives from enterprises to participate in the educational revolution by joining the ministry in an advisory role. Enterprises also offer subsidies to support the development of school activities especially within cooperative education.

Cooperative Education

For many years, technological and vocational education in Taiwan has been very effective, thanks to the partnership with enterprises, which provide practice opportunities and financial support. Figure 1 shows the mechanism of cooperative education in Taiwan. The Ministry of Education (MOE) plays a key role in formulating acts and regulations for cooperative education, and takes charge of coordinating and integrating different requirements from all institutions.

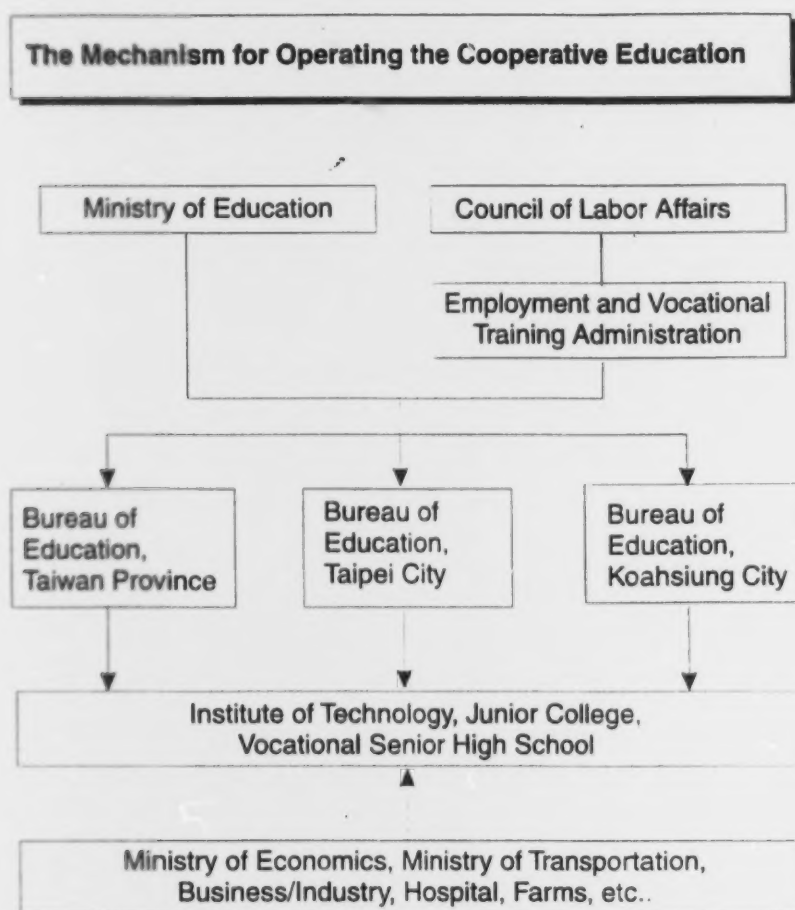


Figure 1. *The System for Implementing Cooperation Education.*

Source: Bureau of Education, Taiwan Province, 1994, 1995

Initiatives and Guidelines

According to the Cooperative Education Regulation, there are three main initiatives for promoting the linkage between schools and enterprises:

- (1) Vocational schools should make maximum use of facilities in both public and private factories, farms and other productive institutions.
- (2) When professionals or skilled workers are needed by manufacturers, vocational schools can be contracted through cooperative method to train their manpower personnel through on the job training or entry employment training.

- (3) Employees in manufacturing facilities demonstrating excellent performance can be enrolled into different levels of vocational schools for advanced learning through a special entrance examination system.

Continuing along the initiatives of the Cooperative Education Regulations, the administration authorities have established some educational guidance for implementing cooperative education.

- (1) To develop instructional plans based on educational objectives.
- (2) To provide written texts of training contracts and individually customized plans for student training.
- (3) To provide teacher coordination and training.
- (4) To establish a well-organized advisory committee on supervision and consultation.
- (5) To establish a training environment, and that working conditions should follow the regulation of labour laws.
- (6) To conduct regular evaluations on cooperative education programs.

There are many types of cooperative education programs, such as rotation, gradation, contracting, work study, commissioning, and so forth. Among them, rotation, which is the main type of cooperation, is a system in which two classes rotate between a school and an enterprise to meet the needs of both institutions.

Table 1 shows student participation for each of the twelve types of cooperative programs. Table 2 shows the number of schools and institutes that participated in a cooperative program. Table 3 shows the number of enterprises that participated in the same program. By 1995, however, the number of students had dropped to 57,625, with only 249 schools and 1,724 enterprises in cooperative programs. This was caused by an economic recession experienced in Taiwan, and the moving of many local business to mainland China.

A Better Future for Cooperative Education

The partnership of schools and enterprises not only exists in secondary and post-secondary education, but is also extended to junior high school level. At the end of 1993, the **Development and Improvement Program of Practical Arts Education for Junior High School Students** was initiated by MOE. This Program was aimed to assist less educated students and those with high skill potential and aptitude in learning practical arts in junior high schools. At the time, the cooperative program was designed

Table 1. Number of Students Participating in Cooperative Education Programs Offered in Technological and Vocational Schools and Institutes

Source: Bureau of Education, Kaohsiung City, 1995

Institutions No. of Schools Type	INSTITUTE OF TECHNOLOGY			JUNIOR COLLEGES			VOCATIONAL SENIOR SCHOOLS			TOTAL		
	1992	1993	1995	1992	1993	1995	1992	1993	1995	1992	1993	1995
Rotation	0	0	0	13,119	0	1,415	17,844	11,269	11,503	30,962	11,269	12,918
Gradation	0	0	0	2,613	0	1,061	681	726	4,107	3,312	726	5,168
Contract	296	174	1,185	8,182	22,918	3,997	636	3,040	235	9,114	26,132	5,417
In-service												
Training	0	0	130	874	0	1,151	1,793	1,374	1362	2,667	1,347	2,643
Commission	0	0	0	169	0	0	100	0	0	269	0	0
Practicum	0	0	12	6,882	0	5,522	1,247	318	785	8,129	368	6,319
Site Visit	0	0	3,276	12,134	0	11,471	408	93	1,793	12,542	93	16,540
Work Study	0	0	0	2,856	0	3,336	2,426	4,051	977	5,282	4,051	4,313
Scholarship	0	0	0	1,465	0	400	167	80	84	1,632	80	484
Research and												
Development	0	322	778	35	1,847	2,925	0	0	0	35	2,169	3,703
In-Factory	0	0	0	0	0	0	15	386	0	15	0	0
Others	0	0	0	3	0	0	482	0	120	482	386	120
TOTAL	296	496	5,381	48,350	24,765	31,278	25,799	18,310	20,966	74,445	46571	57625

Table 2. Number of Technological and Vocational Schools and Institutes Participating in Cooperative Education Program
Source: Bureau of Education, Kaohsiung City, 1995

Institutions No. of Schools Type	INSTITUTE OF TECHNOLOGY			JUNIOR COLLEGES			VOCATIONAL SENIOR SCHOOLS			TOTAL		
	1992	1993	1995	1992	1993	1995	1992	1993	1995	1992	1993	1995
Rotation	0	0	0	12	0	6	66	43	41	78	43	47
Gradation	0	0	0	5	0	5	6	8	11	11	8	16
Contract	3	3	5	37	26	21	7	6	5	47	35	31
In-service												
Training	0	0	2	14	0	9	14	5	7	28	5	18
Commission	0	0	0	8	0	0	1	0	0	9	0	0
Practicum	0	0	1	31	0	31	12	2	12	43	2	44
Site Visit	0	0	2	26	0	20	4	3	8	30	3	30
Work Study	0	0	0	15	0	15	14	9	7	29	9	22
Scholarship	0	0	0	7	0	11	3	2	3	10	2	14
Research and												
Development	0	2	5	1	11	21	0	0	0	1	13	26
In-Factory	0	0	0	0	0	0	1	2	0	1	2	0
Others	0	0	0	1	0	0	2	0	1	3	0	1
TOTAL	3	5	15	157	37	139	130	80	95	290	122	249

Table 3. Number of Enterprises Participating in Cooperative Education Program of Technological and Vocational Schools and Institutes
Source: Ministry of Education, 1992, 1993, 1995

Institutions No. of Schools Type	INSTITUTE OF TECHNOLOGY			JUNIOR COLLEGES			VOCATIONAL SENIOR SCHOOLS			TOTAL		
	1992	1993	1995	1992	1993	1995	1992	1993	1995	1992	1993	1995
Rotation	0	0	0	95	0	79	344	112	283	429	112	362
Gradation	0	0	0	78	0	51	55	33	148	133	33	199
Contract	79	15	50	1,432	255	94	10	13	7	1,521	283	151
In-service												
Training	0	0	3	33	0	24	70	15	14	103	15	41
Commission	0	0	0	26	0	0	1	0	0	27	0	0
Practicum	0	0	2	819	0	400	65	7	51	884	7	453
Site Visit	0	0	1	253	0	198	53	24	36	306	24	235
Work Study	0	0	0	103	0	69	71	23	17	174	23	86
Scholarship	0	0	0	21	0	31	6	2	8	27	2	39
Research and												
Development	0	51	62	12	154	92	0	0	0	12	205	154
In-Factory	0	0	0	0	0	0	1	1	0	1	1	0
Others	0	0	0	2	0	0	6	0	4	8	0	4
TOTAL	79	66	118	2,874	409	1,038	682	250	568	3,635	705	1,724

and implemented by one 5-year junior college, three vocational training centres and 81 vocational high schools. Presently more and more vocational training centres and junior colleges have become involved in the program with assistance from enterprises. It is planned for this program to be incorporated with another program, in progress now, in senior high schools.

This partnership has strongly united the educational field and enterprises to promote manpower cultivation for the next century.

In order to successfully achieve the partnership, several approaches are recommended in order to reinforce the function of cooperative education.

- (1) An intensive campaign for advertising cooperative education.
- (2) Cultivating and employing professional and competent coordinators.
- (3) Organizing the planning and implementation of training plans, contracts and training activities.
- (4) Detailing planning and effective delivery of related instructions.
- (5) The provision of a good advisory service to vocational guidance.
- (6) The establishment of an advisory committee with sound operation.
- (7) The reinforcement of teachers' connections with enterprises.
- (8) A regular follow-up survey of graduates.

Another Partnership-Business and Higher Education

Besides the cooperative education, the Ministry of Education has initiated a series of plans to further reinforce the function of cooperative education by providing:

1. Service training/education for the higher education teachers visiting/studying in enterprises.
2. Workshops, seminars and conferences about the professional fields.
3. 20 annual awards for teachers for their contribution to enterprises. (NT\$ 200,000 per award)
4. 10 annual awards for the Best Doctor dissertations relating to enterprises. (NT\$ 150,000 per award)

These plans are generally managed by the science and technology committee within the Ministry of Education. The National Science Council (NSC) has also been in charge of this kind of cooperation between the universities and enterprises since 1993. It has subsidized 172 research projects, of which at least 15 % of the research has been supported by enterprises. In 1997 there is a US\$ 10,000,000 fund for the following research fields:

(1) electrical engineering (2) electrical engineering (3) polymer (4) mechanical engineering (5) microelectronics (6) optical electricity (7) chemical engineering (8) material science (9) auto motion technology (10) information technology, and others.

Beginning in 1997, the Executive Yuan ordered large-scale public sectors, such as Taiwan Power Utility Company, Taiwan Petroleum Utility and Taiwan Sugar Company, to offer research funds to universities. The public sector must spend at least 1 % of their budget per year in order to improve the manufacturing process and develop new products.

Likewise, some of the foundations also play very important roles by assisting with research and development at universities, for example, the Tjing Ling Industrial Research Institute which has cooperated with the industrial sector, academic sector, and government ministries for many years. The Institute supplies research programs, service programs and training programs to help promote industrial standards, economic expansion and industrialization, and build connections between academic, industrial and governmental societies. Thus, it is devoted to create closer cooperative relationships between enterprises and schools. In association with the College of Engineering of National Taiwan University, the institute is the backbone of cooperative development, having found opportunities for coordinating with industrial and academic sectors, and also improving and developing research environment.

At present the Tjing Ling Industrial Research Institute cooperates with National Taiwan University to supply research, service, promotion and training in the following:

Research Programs

Several research groups operated by professors from the College of Engineering is working on some practical projects in accordance with the urgent requirements of industries. These are:

- (1) Precision Machining Technology
- (2) Laser Technology in Material Processing
- (3) R&D of Modern Electronic Instruments
- (4) Industrial Combustion Technology
- (5) Powder Technology
- (6) Composite Chemical and Analysis Technology
- (7) Polymer Composite Manufacturing Technology
- (8) Environmental Control Technology
- (9) Non-destructive Testing Technology
- (10) Computer Integration Manufacturing Technology
- (11) Aluminum Alloy Foreign Technology
- (12) Shape Memory Alloy Technology

- (13) Ultra Precision Positioning Technology
- (14) Intelligent Real Time System Technology
- (15) Material Structure Research
- (16) Welding Technology Research
- (17) Automation Research
- (18) Testing and Research on Quality of Reinforced Concrete
- (19) The Interface Science and Technology Research Group
- (20) The Metal and Ceramics Powder Injection and Formation Research Group
- (21) The Design and Application of Intelligent Agents Research Group
- (22) The Mechanical and Electrical System Research Group

Service Programs

In association with the College of Engineering, the Institute has the capability of rendering industrial service in the following areas:

- (1) Material Strength Testing
- (2) Waste Water Quality Testing
- (3) Non-destructive Testing
- (4) Noise and Vibration Testing
- (5) Laser Process Service
- (6) Dimensional Metrology Service
- (7) Electronic Instrument and Laser Maintenance Service
- (8) Workshop Service

Training Programs

The institute has cooperated with the faculty of engineering for many years in offering training courses to industry in many areas, such as Environmental Control, Factory Automation, and Manufacturing Technology. In fact, most of the engineering courses are available upon request. The training is conducted in the form of seminars, workshops, short courses, and a series of long term courses.

Cooperative education is a three-way partnership between the school, the enterprise and the government. All must participate in order for the partnership to succeed. Within Taiwan, cooperative education has been very effective and successful. However, there is still room for improvements as more enterprises and schools work together to promote public interests and benefits, and for the government to involve itself more in the networking of business and educational institutes.

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Australia

KNOWLEDGE-BASED COOPERATION IN VOCATIONAL EDUCATION, UNIVERSITY AND INDUSTRY IN AUSTRALIA

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The dramatic economic growth of the countries surrounding the Pacific Rim in the 1980's and 1990's and the resulting shortages of human resources in major industrial sectors have contributed to universities, institutes and training centres to reconsider their delivery role as suppliers of skilled personnel necessary to sustain the high rate of growth. One of the key elements of the transformation of human resources development in the countries of the Asia Pacific is the cooperation, collaboration and linkages between universities, training institutions and industry. (Turpin et al: 1996:vii)

No where is this cooperation more critical today than the knowledge based activities in vocational education and training, universities and industries on which many economies are dependent upon to lead the way to sustained economic growth in Europe and in the Asia Pacific region.

The critical human resource development issues facing many governments in the Asia Pacific concerns the construction of new and reconstruction of existing strategies and programs which stimulate and supply the necessary volume of skilled workers, the level of specialised and general capabilities to sustain the pattern of economic growth for the next century. Other issues include the directions, curriculum and method of educating, training and retraining a 3 billion person population in an economically, socially and culturally diverse region for the future.

These are the global issues, and this paper adds to the debate by discussing the framework, organisation issues and mechanisms for knowledge based activities in vocational education and training, and the univer-

sity-industry cooperation in the Australia.

The paper analyses and discusses the Australian vocational education and training (VET) system in relation to three knowledge based activities, research, training and consulting. In addition it examines the nature of the Technical and Further Education (TAFE) system, the type of knowledge based cooperation it has with local industry and the policy changes in the VET system initiated by the new conservative government in Australia.

It also discusses the Australian Government's commissioned study on knowledge based activities in the university - industry linkages undertaken by the Centre for Research Policy, University of Wollongong. The university-industry study was initiated in 1995 by the Asia Pacific Economic Cooperation (APEC) Forum on Human Resource Development (HRD) Working Group as part of a project on a comparative analysis of knowledge-based cooperation in the Asia Pacific region.

In the discussion centred on university-industry cooperation, the different *types* of knowledge-based cooperative activities between the two sectors in training, research and development, and consulting are highlighted. The principal *delivery mechanisms* are identified, such as the training centres, consulting units, research institutes, cooperative research centres, science parks, and incubators and technology advisory forums, currently operational in Australia.

The policy recommendations arising from VET system and the higher education system in Australia are discussed and opportunities for cooperation between Europe and Asia Pacific are identified in the context of internationalising the knowledge of cooperative research, education and training and consulting activities with industry.

Australia is selected as a focus of the study as a Member of the Asia Pacific Economic Cooperation (APEC) Forum and because of its strong policy emphasis in the development of university-industry linkages.

This study is discussed as a point of discussion on comparative strategies for VET and the university-industry cooperation activities in the Asia Pacific. Other Members of APEC region such as the United States of America, Canada, Japan, Korea, Singapore, Malaysia and Chinese Taipei (Taiwan) adopt variation of the Australian model in cooperative activities.

However, new industrial demands are emerging requiring new forms of vocational education and university-industry organisations to fulfil the need of managers of knowledge based systems which integrate industrial, scientific and commercial outcomes.

Knowledge-Based Cooperation Between VET and Industry in Australia

By definition, all education and training activities are knowledge based activities, in one form or another. But in terms of the focus of this paper, academic research, research training and consulting activities are the types of activities selected for discussion.

As expected, academic research linkages with industry are not major activities in a vocational education system. In Australia, the situation is similar where the system is driven by training and increasingly, with much greater participation by industry than previously is the case.

However, this does not mean that no research activity takes place. On the contrary, in the vocational education and training system in Australia research is undertaken by a research institution and a committee. To date the research in the vocational education system has focused on internal and domestic issues such as occupational competencies, accreditation of qualification across states, standards and the like. The research is different from the theory based, broad, basic, and applied research undertaken mostly by universities.

Before identifying and discussing research activities taken by the Vocational Education system in Australia, it is necessary to outline the national system in Australia, to appreciate the issues which are raised in this paper.

The Vocational education and training system in Australia is the result of a federal system of government, i.e. a federation of 6 states and 2 territories, often of different political persuasions; a combination of federal and state/territory funding; and the different responses to the diverse and competing needs of industry across the Australia. Developing consensus in national decisions is often problematical, let alone the implementation of programs.

In Australia, as in many social-democratic countries, the VET system is largely public funded; the structure and organisation is diverse and complex. In addition, the need for public accountability, consensus and balance against the need of diverse industry, makes management of the education agendas, problematic.

In the past, the Australian VET system was more of a supply driven organisation than the present. The Australian government has, however, been changing the rhetoric and focus in VET to one which is demand driven, the demand coming from Industry. The dilemma was the government increasing its budget to VET but industry consistently complained of not receiving the number and quality of new recruits to produce at a pace dictated by demand.

The Australian National Training Authority (ANTA) is the major institution responsible for the development of a vocational education and train-

ing system in cooperation with the Federal, State and Territory Governments and industry. The focus ANTA's activities was the establishment and maintenance of training development, infrastructure grants, curriculum development and international marketing. Now, it is directed at implementing the Modern Australian Apprenticeship and Training System (MAATS), changing the culture of VET to a demand driven training system and involving industry as the major participant in the system.

In each of the 8 States and Territories in Australia, the Technical and Further Education (TAFE) system is the main provider of vocational education and training at the moment. The CEO of ANTA has publicly announced that industry will drive training in the future.

VET Training

Training in Australia, not unlike other countries, is basically offered in one or two formats:

- contracts of training-qualifications offered through apprenticeship and traineeships;
- programs of training- skills and qualifications offered through course work;

Individuals seeking training in Australia undertake it through the following providers:

- Employers – work bases contracts of training;
- TAFE – Technical and Further Education and training Institutions;
- Private providers – registered private trainers;
- ACE – Adult and Community Education organisations.

There are 1.3 million enrolments in VET, twice the number entering universities. About 10 per cent of Australia's working age population (14–54) are enrolled in VET at any one time. It is estimated that approximately 600,000 people are unable to gain entry in 1996 to VET, compared to less than 30,000 for higher. But as the CEO of ANTA again admitted in a speech to a Research conference (July 1996), the critical problem in Australian VET is that it does not act like a market.

In New South Wales for instance, 12 institutes deliver a range of nationally recognised courses to more than 20 metropolitan and regional campuses. In NSW, Australia, TAFE vocational courses are accessible via multimedia. The distance education program, *The Open Training and Education Network (OTEN)* offers distance education programs to assist home study customised to individual needs and capabilities. The courses are delivered

by a range of multimedia strategies to the home of students. Flexible study options are also available to students to suit their own pace, time and level. The recognition of previous learning and skills is also possible in TAFE.

Research Based Activities in VET

In terms of knowledge based activities such as research, training and consultancy, Australian vocational education delivers these activities through a combination of institutional based and commissioned research driven by a committee.

Research is mainly undertaken by a publicly funded organisation, the *National Centre for Vocational Education Research* (NCVER) with offices in three states in Australia. The research is primarily focused on labour market, competencies, and workplace training issues, depending on the agenda of the institution at a particular time. The research output is scarce on the cooperative ventures and linkages between training provided meeting the needs of industry. The anecdotal evidence in TAFE is strong that Australian training responds to, and cooperates with diverse local industry needs well but no empirical data is available to evaluate this hypothesis.

The VET system in Australia has adopted a strategy of funding Key Centres to research specific aspects of the system. Currently, 4 key centres are funded:

- Research Centre for Vocational Education and Training(RCVET) which focuses on issues in the workplace learning and assessment, at the University of technology, Sydney;
- Center for the Economics of education and Training(CEET) which studies the economic impact of VET, located at Monash University, Melbourne.
- Centre for Research and Learning in Regional Australia, studying the effectiveness of learning in regional Australia, located at the University of Tasmania;
- Centre for Vocational Assessment Research which focuses on assessment and is located at the University of Melbourne. The Centre is a joint venture with New South Wales TAFE. ([anta.gov.au / researchcentres.html](http://anta.gov.au/researchcentres.html)).

These Key Centres are funded by ANTA.

The key research centres study important aspects of the VET system in Australia but they do not focus on business industry as such. Although individual industry representatives are participating in the management of the centres, they are not major partners and industry specific issues may not be addressed by the 4 centres.

In addition to the key centres, Australia has a National Research and Evaluation Committee (NREC) whose primary responsibility is to disseminate the findings of VET research to the stakeholders in the system. It is interesting to note that Australia needs a committee to disseminate VET research information. (anta.gov.au/currissu/nrec/html)

TAFE's Consulting Activities

In addition to providing training courses, most TAFEs offer consulting services and advice to the international market and industry through normal fee for service contracts and agreements. The degree of success of these contracts is difficult to assess due to confidentiality provisions and a lack of systematic research on this type of cooperative activities.

In each state the TAFE system offers consulting services to develop training strategies, curriculum development, training needs analysis audit, and company based and directed training customised to the firm's needs. Again, no empirical data exist across Australia except in functional areas to compare the level of consulting, the direction or efficacy and the degree of industry participation and support. Here, the Federal and State system of financial and functional cooperation responsibilities in vocational education conspires to make coordination and consistency problematic.

The major issue in the Australian VET system continues to be in systematically identifying, evaluating and directing the knowledge based cooperation with the diverse industry, usually, with small and medium enterprises to meet their training requirements. This focus is now acknowledged and championed by the Minister in charge and the CEO of ANTA. The institutional delivery of TAFE system is currently evolving into a more industry driven training organisation. It remains to be seen if this culture change will result in making Australian industry more competitive internationally.

The knowledge based university-industry cooperative activities form the other part but different equation. To analyse the whole process of knowledge based cooperation with industry in the Australia, it is necessary to discuss the university-industry linkages.

Knowledge Based Cooperation between Higher Education and Industry in Australia

International research has emphasised the increasing significance of cooperative arrangements between universities and industrial firms in generating technological advance and innovation. Another feature of the knowledge based cooperation concerns the increasing role of government in di-

recting, promoting and funding science policy, human resource and economic development particularly in the Asia Pacific region, the home of 3 billion people.

Turpin et al. described the cooperative environment in Australia as:

Governments here, more than ever before, are concerned with directing national research efforts towards commercial outcomes and with building appropriate infrastructures for generating, transferring and utilising "marketable" research outputs (1996:1)

To explain the framework of cooperative arrangements in the knowledge based industry in Australia, it is essential to identify the levels of linkages between the university and industry sectors.

Levels of Cooperation

In Australia, 3 levels of university-industry cooperation are identified:

- as project *collaborative partners*, formalised and structure in a short or long term, and could be in minor or major activities;
- between *individual or group* of academics and industrial partners, usually organised on a project by project basis, long or short term and arranged through consulting contracts but usually less structured, less formalised and less control bureaucratic institutions;
- structured *institutional arrangements* reflecting the new pattern of research-business interaction; more formalised and structured, driven by interaction between academic and industry interests and rearticulation of the boundaries between the two sectors, and between teaching, research and consulting.

In addition, as Turpin et al. noted:

there is strong evidence emerging in Australia that transfers of knowledge between academic research and private enterprise are being led by a broad ranging and two pronged dynamic- the transfer of embodied technical knowledge and of uncodified capability (ie. people's tacit knowledge, both about technologies and the social means by which they may be captured) (1996:2)

Current Government Funded Cooperative Mechanisms

The diversity of government supported mechanisms to encourage university-industry in research and research training at different levels is considerable, reflecting a complex network of interdependence and interactions of the sectors.

Major elements of the Australian cooperative mechanisms include:

- the creation of new industry research scholarships from the Australian Research Council (ARC), Australian Postgraduate Awards(Industry) and Research Fellowships (Industry)
- the integration of Industry R & D Board Grant Schemes (including the national Teaching Company Scheme) into a competitive grants program-competitive Grants for Research and Development;
- provision of a Collaborative Grants Scheme within the ARC competitive Grants Scheme programs;
- creation of Key Centres for Teaching and Research (KCTR);
- the creation of an institutional and structural basis for collaboration in the Cooperative Research Centres (CRC) from 1990, based on 62 operational centres in 1996;
- the establishment of three Advanced Engineering Centres to promote university-industry collaboration and technical excellence in engineering management, training and research;
- introduction of a 150 per cent taxation concession scheme to increase business sector research and development and,
- the formation of Research and Development Corporations (RDC) for distributing and managing rural industry and similar research funds.

This list of cooperative initiatives funded by the Government is not exhaustive, but it captures the diversity and complexity of research cooperation between the university and industry sectors.

All the programs are designed to promote research between universities and industry, however, other programs such as the Postgraduate Research Awards and the Key Centres for Teaching and Research also directly encourage cooperation in training.

The centre-based programs have the potential to build links across university departments, between universities and with industry over a comparative long-term framework. The Collaborative Grants are more project-oriented, discipline specific and directed towards individual researchers and their industry partners.

There is now strong evidence in Australia that the research support mechanisms are becoming closely linked with university training.

Training Cooperation

In the past decade, Australia has extended the forms and extent of cooperative arrangements for education and industry. This phenomena was driven by the need to be internationally competitive in industry, deregulation of the labour market, a stronger emphasis to expand vocational education, and the skills in the workforce and the initiative to encourage post secondary education to respond to industry needs for skilled workers and domestic and international competition. The Australian TAFE is well articulated into schools in terms of selected curriculum and accreditation.

The current trend in Australia is a redefinition of the boundaries between universities and TAFE. Four Australian universities have incorporated TAFE components in their structure within the Unified National System. Further, there is progressive inclusion and articulation of TAFE qualifications with university teaching programs. TAFE is particularly strong in its nexus with industry and is more responsive to serving the needs of local industry, particularly, small and medium enterprises than the universities in Australia.

There are three forms of cooperation between universities and industry in education and training.

One, the more 'traditional', is oriented towards the professions—medicine, law, engineering—where course content and delivery is to a large extent controlled by the governing body of the professions, including monitoring procedures and reviews to ensure standards are maintained.

Student placements in the workplace for practical experience sandwiched between formal teaching is another form of cooperative programs. There is an increase in such collaboration in Australia as employers are demanding better and more practically trained graduates to meet their human resources needs.

The third, is the 'newer' mode of cooperation that includes the appointment of individuals from industry or the professions to contribute in Advisory Committees, appointment of Adjunct Professors, and funding of disciplinary professorial chairs by corporations in selected fields.

As Turpin et al. (1996) commented, each of these forms of cooperation are essentially marginal to the mainstream of business. They remained at 'arms length' relationship with relatively minor impact on the cultures, traditions, objectives and practices of either university or industry.

The 'newer' forms of cooperation are more substantial in their impact on universities, the training in industry and the nature of relationships between the two sectors. These joint ventures take the form of strategic alliances and partnerships and are shaped by the experiences of both partners.

An analysis of the 'newer' forms of knowledge based cooperation between training and industry identified the following features:

- shared governance through a board that include all parties, unions and professional bodies;
- a formal agreement stipulating roles and responsibilities;
- commitment of development funds by partner or through external 'seed' funding;
- open communication;
- shared needs analysis of the workplace;
- shared curriculum development;
- shared delivery of the program using innovative methods suited to the needs of the work place, reflecting the distinctive strengths of the partners and the organisational structure of the employer and,
- administrative, academic, financial, technical and human resource systems geared to flexible delivery and client service.

Features of Cooperative Programs in Education and Training

In the Australian study, the data showed the extent of the university-industry cooperation in education and training. Out of 36 public universities:

Universities	Cooperative Partnerships
8	0
23	At least 1
5	50% of programs

As Turpin et al (1996:24) commented, the 'newer' universities rather than the established 'sandstone' universities are more successful in creating cooperative education. Their relative 'youth' with less entrenched attitudes and practices may account for their propensity to embrace new forms of partnerships.

The *type of partners* in the cooperative arrangements tended to be the private sector and government as the following data reveals:

Type of Partners	No
Private Company	30
Industry Associations	11
Government Agency	19
Government Department	11
Professional Association	12
Trade Union	2

In total 54 per cent of cooperative programs are with industry or with industry associations and Government affiliated organisations account for 39 per cent (NCVER, 1996).

According to the Australian study, the type of *economic activity* in which cooperative programs are engaged in, tended to be the Services sector – financial services, accounting, consulting and management – accounting to 32 per cent of programs. These activities derive from the fastest growing sector of the economy.

The features of the type of courses offered in the cooperative partnership are:

Courses	Percentage
Non Award	34 %
Optional, Accredited	18 %
Graduate Certificates	17 %
Diploma or Associate Dip	14 %
Professional Qualifications	9 %
Undergraduate or Post Grad	8 %

The majority of the cooperative education and training programs are focused on non-award courses for industry partners.

As expected, the target audience of the programs tended to be the staff or members of professional associations who are partners in the cooperative.

Recent initiatives reflect a new process of commercial organisations seeking universities to tender for the needs analysis or delivery of training programs in private companies.

For instance the Australian Institute of Directors invited universities to undertake the following:

- articulate Company Directors course to graduate level;
- deliver the Company Director's course;
- collaborate with National Education Committee to develop programs and curriculum for Company Directors course.

Consulting

This form knowledge based service is extensive but difficult to ascertain the level of cooperation between universities and industry. It is known that a wide range of consulting services are provided to industry including technical development, testing, policy advice and product development.

In the 1980's most Australian universities established 'commercial arms' to manage these sorts of cooperative links and to assist academics with the commercialisation of new technologies. Currently there are 110 commercial enterprises owned or controlled by Australian universities.

In the absence of formal mechanisms for reporting such activities, it has been estimated that the breakdown of consulting in Australian Universities are as follows:

Licensing, royalties or selling of intellectual property	30 %
Consulting services	45 %
Teaching	25 %

The commercial arms of universities have been established to integrate the research, teaching and consulting models of cooperation in Australia but with uneven success.

Motivations, Constraints and Outcomes

This paper has demonstrated the diverse range of mechanisms for supporting cooperation between universities and industry in education and training. The success of each form of cooperation depends on a number of factors. In general, Turpin et al. (1996:29) commented that:

...informal and personal links can merge and endure without structured relationships, but the reverse is not the case.

The informal and formal links merge in the following patterns:

- industry researchers or managers maintain contact with university supervisors and contemporaries;
- academics with experience in industry maintain contact with former employers and co workers;
- academic and industry researchers meet at industry focused scientific conferences;
- student scholarships funded by industry create new sets of personal relationships.

However, there are barriers to productive cooperative links with industry. The universities have identified the following:

- difficulties in managing the balance between teaching, research and consulting;
- industry requirement to withhold publishing and the sharing the flow of scientific information;

- cumbersome and slow administrative processes at universities;
- difficulties in matching scientific agendas with business plans of industry;
- differences in terms of expectations on time frames; scientific or commercial objectives and collaboration with others outside the formal agreements.

The structural differences highlight the need to manage 'cultural differences' between university and industry sectors.

From industry's perspective the major motivation for the cooperative partnerships with universities is gaining access to specialised skills and equipment provided by universities.

Other difficulties identified by industry with the cooperative partnerships were:

- intellectual property arrangements because universities take an unrealistic attitude;
- universities as public institutions have too much emphasis on committees structures, continuity of funding projects rather than outcomes;
- universities take projects beyond its commercial usefulness.

The problems in cooperative training similarly focus on the lack of understanding of the organisational cultures of TAFE and industry. A recent survey of industry partners stated:

...a perception that higher education and TAFE were difficult to work with because of bureaucratic impediments, academic attitudes, a lack of flexibility in course design and delivery, an unresponsiveness to workplace needs and a believe that academic standards and the real mission of universities would be eroded.....

In Australia, one of the most noticeable features of industry and university cooperation in teaching concerns customer driven training. In the telecommunication case study, training linkages have been managed through a steering committee. Addressing the needs of the firm is going beyond cooperative training to developing in-house delivery, which to some extent, will be in competition with the universities.

Summary and Conclusions

This study of the Australian cooperation in knowledge based industry shows that cooperative links involve extremely complex webs of personal and organisational networks.

The VET-industry cooperation in Australia is currently undergoing change stimulated by Government policy from one where industry was a passive partner to one where industry is a major and active partner driving training programs. The VET system in Australia is emphasising the need for more research, more industry linkages and orientation in the future. New forms of VET - industry cooperation are currently emerging and the impact and outcomes of this relationship will be keenly monitored by Government and industry.

The university-industry links are not simply formal arrangements where industry learns, and benefits by University research and teaching but are part of the dynamic process which yields a range of different, yet interrelated benefits to both sectors. Both formal and informal links in this chain are critical to successful mechanisms of cooperation.

This paper identified three mechanisms between university and industry sector. These are, links made through contractual arrangements, links built around grants and links which create new organisational forms involving both partners in joint ventures or cooperative centres.

As Turpin et al. (1996:37) stated, the clear observation from the Australian linkages study is that these mechanisms should not be considered as independent of each other but rather, as necessary components for the development of knowledge based systems. The development of such systems rely on the integration of appropriate technical training, advances in science and technology and marketing and business knowledge.

The main feature of Australian government linking programs are the combinations of research, teaching and consulting. The Key Centres combined research and teaching activities while the Centres for Cooperative Research seek to built links between research and consulting activities. The Research and Development Corporations integrate commissioned research, training and the dissemination of research results.

Internationally, strong evidence indicates that transfers between academic research and the commercialisation of research are led by movement of people and the establishment of broad ranging personal networks. Collaboration provides a necessary stimulus to technological and organisational learning.

The complexity of cooperative mechanisms and the wide range of potential industry groups, university-industry links are often developed through an intermediary, a 'broker'.

However, the brokering role appear to be overtaken by the formal collaborative role, focused on the Collaborative Research Centres (CRC). This is the most important formal structure for collaborative research, research training and industry related training as well.

The Australian study emphasises the importance of developing balanced interrelationships between project funding and longer term funding programs which underpins a concentration of expertise and facilities.

International Implications

The study by Turpin et al. (1996) of Australian university-industry linkages reflects the intricate nature of research and educational links and the complexity of alliances and brokers which support them. These links are interwoven within a wide complex of links that connect different firms and universities to the knowledge-generation and innovation process. In each partnership, the benefits to industry and universities are different but the flow of ideas and the returns are complimentary to the objectives of individuals and institutions.

With the trend towards globalisation of companies, science, education and training, there is an urgent need to consider the development of international and regional networked knowledge systems. International forums such as the Asia Pacific Economic Cooperation (APEC) and the Asia-Europe Meeting (ASEM) are built on the principles of cooperation and collaboration for mutual benefit. APEC is one of the most significant economic policy forum with a strong emphasis on human resource development in industrial technology, education and business training. The ASEM is more recent meeting of 24 heads of government from Europe and Asia. The main focus of the ASEM agenda tends to be economic cooperation and again, human resource development is a major objective of the meeting.

It is suggested that these two international organizations in particular should be create a link, cooperate and collaborate on human resource development initiatives together to benefit the populations of two major regions of the globe, Europe and the Asia Pacific. In APEC there are in excess of 80 HRD projects in progress spanning its 18 member economies. For a cluster of APEC members, education and training in a wide range of areas is a high priority. They require cooperation and collaboration in building up knowledge based systems to generate technological advances and innovation as well as adapt existing technology and ideas appropriate to their cultures and society.

- APEC and ASEM should develop a data base or clearing house on mechanisms for VET-industry and university, -industry education cooperation to promote international exchange of ideas, knowledge and understanding of the complex environment of developing human resources;

- APEC and ASEM should sponsor and coordinate knowledge based systems across the two regions for human resource development and increase industrial productivity;
- APEC and ASEM meetings, funded from within each member country to organize international forums on levels, content and mechanisms for cooperation on human resource development.

In creating international linkages not only between VET systems, higher education and industry, the International Vocational Education and Training Association (IVETA) has pivotal role to contribute to the development of such relationship. IVETA has the international vocational education and training networks in place and could now consider involving respective governments to argue for new relationships such as the proposed APEC-ASEM.

It is through international networks of knowledge based systems in research, education and training, and their implications on local regions that the future lies. Cooperation and collaboration are better principles with which to serve people than competition, win-lose or winner takes all.

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Europe

STRATEGIES FOR PROMOTING PARITY OF ESTEEM BETWEEN VOCATIONAL AND ACADEMIC EDUCATION

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Introduction

The purpose of this article is to present the results of the cross-national Post-16 Strategies project¹. The project surveyed and compared upper secondary school reform strategies, that have promoted parity of esteem between vocational and general education, within and across eight European educational systems. The partnership represented a broad range of expertise: the researchers examined the problems involved in parity of esteem from a multidisciplinary perspective, and their views have been complemented by the experience of school administrators and teacher educators.

The project identified four strategies for promoting parity of esteem: (1) vocational enhancement, (2) mutual enrichment, (3) linkages, and (4) unification. The different reform priorities and strategic perspectives arose in work-based and school-based vocational education systems. The lessons from different systems were identified.

In addition to revealing a range of alternative post-16 education strategies and mutual lessons, the study also drew on conceptual frameworks, generated materials for working out implications for the development of educational policies and created collaborative linkages between European

¹ This two-year (December 1995 - November 1997) project was carried out with the financial support of the Commission of the European Communities under the LEONARDO da VINCI Programme. It was coordinated by the Institute for Educational Research, Jyväskylä, Finland and managed by Dr Johanna Lasonen.

pilot schools. The experiences, process and findings of the Post-16 Strategies project have had a transfer value for the development of eight nations' secondary school systems.

Methods and Procedures

The principal method chosen to carry out the project was that of a *structured collaborative writing process* where an interdisciplinary and international team of experts worked out the results of its analysis in and through writing. This process advanced in stages according to collectively agreed tasks.

In the first stage partners worked as national teams. Each team prepared a report on recent, ongoing and forthcoming reforms which aimed to improve parity of esteem between vocational and general post-16 education in their country. Each report analysed the strategy underlying the reforms, and related them to the national education system and its social, economic and political context. It also identified issues for further study in the project. This stage culminated in the project's first workshop, when each national report was presented for discussion among members of the partnership. The national reports were subsequently revised and published in the project's interim report (Lasonen, 1996).

The same workshop began the process of moving from analysis at the national level to comparative analysis. A 'brainstorming' session identified six priority themes which were common to the different national reforms. These were, respectively:

- parity of esteem;
- the labour market context (matching VET provision to labour market needs, future skills, lifelong learning, core/key/transferable skills);
- the features of the educational system emphasised by the reform, and the model of change;
- local networking/linking between schools, and between schools and working life, to find new forms of learning for future skills;
- teacher education or/and teachers' co-operation supporting the reforms; and
- qualifications, curriculum development, and the flexibility of student programmes.

The next collaborative writing task proceeded in two stages. First, each national team prepared a brief report which analysed its country's reform strategy in relation to the six themes. These reports were then analysed by pairs of partners; each pair comprised partners from two different coun-

tries and developed a comparative synthesis for one of the six themes. As a result, the four strategies were identified as a basis for analysing the differences and similarities of the reform approaches in the eight countries.

Representatives of schools in partner countries which were involved in the national reforms, for example as experimental or pilot schools, made reciprocal visits. The choice of partner country was guided by the comparative analyses, and the reports of the exchanges fed back into the later analyses of strategies.

In the next stage of the project partners worked in two-country teams, drawn from countries pursuing the same strategy. Each team described the aims, objectives and rationale of the strategy and placed it in the context of the national systems where it was being pursued. It discussed the practical issues and problems encountered by the strategy, and reported on its progress and outcomes where the reforms had been in operation for long enough for these to be known. Early drafts of the strategy reports were discussed in round-table sessions at the third workshop of the project. This workshop identified several themes or issues that were raised by each strategy paper; it was agreed that the papers should be revised to take explicit account of these themes, thus enhancing the comparability of their coverage and analytical approach. The revised strategy papers were discussed at the fourth and final workshop. The final versions are included in the final report of the project (Lasonen & Young, 1998).

Several distinctive features of the project's methodology related to its collaborative aspects:

- (1) The partnership as such, the project team as a collective, has been an essential aspect of the project. The team has collaboratively defined generative classifications, made decisions on joint collaborative writing tasks and constructed a picture of policy settings for promoting parity of esteem.
- (2) Each team 'represented' one of the eight education systems, by providing data on the system and current reforms, by preparing a national report and by explaining the system and interpreting the data to other teams.
- (3) The project alternated between two modes: partners worked as national or bi-national teams to prepare reports on their own country's strategies.
- (4) There was a wide mix of disciplines within the project, and the teams included teacher educators and administrators as well as researchers. Pilot schools were also involved but the degree of collaboration between the researchers and pilot schools varied.
- (5) The outcomes of the project have been produced in and through a collaborative writing process based on team members' expertise and previous studies.

Collaborative writing method used as a tool of cooperation was based on the assumption that knowledge of European educational phenomena emerges in social interaction. Mutual learning through collaborative writing was regarded as a social endeavour.

The Results of the Post-16 Strategies Project

The Post-16 Strategies project examined and compared the educational strategies applied, with a view to improving the attractiveness of vocational education and promoting parity of esteem, in the upper secondary education systems of eight European countries (Austria, England, Finland, France, Germany, Norway, Scotland and Sweden). Study visits to (pilot) schools were used in the project to promote collaboration between research institutes, educational agencies and schools. Thus the project has reinforced existing networks between teachers, administrators and researchers, and given an impetus to the creation of new ones.

The goal of the first phase of the project was to describe the status of initial vocational education, survey post-16 education reforms undertaken in eight European educational systems and sketch out the problems associated with the lack of attractiveness of vocational training and the disparity of esteem between vocational and general education.

The Reforms

The reforms to be analysed differed in their scope and extent. The Austrian, English, French, Norwegian, Scottish and Swedish reforms were nationwide. Unlike the other, ongoing reforms, the Scottish Higher Still is yet to be implemented. The German research is based on a single pilot site while in Finland the reforms are being run in 16 localities.

The focus of the Austrian reforms is the introduction of Professional Highers (*Berufsmatura/Fachmatura*) and on establishing a system of polytechnics (*Fachhochschulen*). Those completing apprenticeship training will also be able to gain university entrance qualifications.

The English and Welsh reforms centre on the National Qualifications Framework defined in the Dearing Review as comprising school-based and work-based routes (A levels, GNVQs and NVQs). Since 1991, academic and vocational qualifications have been officially described as "separate and equally valued". In this context the concept of parity of esteem refers to formal equivalence.

The programme of the French *Baccalaureat professionnel*, created in 1985, is not equivalent to the traditional academic programmes but is designed to be more attractive to students than the other vocational programmes.

Furthermore, the *Baccalaureat professionnel* has common features with the Technological and General Baccalaureates.

The Norwegian and Swedish reforms that established comprehensive upper secondary schools were introduced in 1994. Academic competencies were extended to vocational students by incorporating more general subjects into vocational programmes. Cooperation with working life has been improved and vocational students have been given more hands-on experience. The Norwegian reform affects both educational structures and curricula, while the Swedish reform is mainly structural in emphasizing unification. During their three-year training Norwegian vocational students are able to alternate between school-based and on-the-job training (the 2+ model). Norway has also started training vocational and general upper secondary school teachers in common teacher education programmes. The Swedish reform emphasises uniformity of treatment and common outcomes for all students. Scotland's forthcoming (to be launched in 1999) Higher Still is a nationwide and systemic reform.

The Finnish "youth education reform", begun as an experiment in 1992, has broadened the range of qualifications available, especially to vocational students. Students' freedom of choice has been increased by developing collaboration between local groups of vocational and general upper secondary schools. The reform is being piloted in 16 localities, comprising about 20 per cent of the starting places offered in vocational upper secondary schools and about 12 per cent of those available in general upper secondary schools yearly.

The Schwarze Pumpe project in Brandenburg involves about a hundred students. It focuses on bottom-up, process-oriented reforms within the dual system and aims to modernise the vocational education curriculum and pedagogy to take account of changes in society and on the workplace. The project seeks to qualify young people for higher education as well as for employment by exploiting the potential of modern vocational training to develop, in students, the capacity to study. Another aim is a level of education equivalent, in some respects even superior, to that delivered on the academic/general track of German upper secondary education.

The Strategies

Mapping the dimensions of the reforms undertaken in eight upper secondary education systems and comparing them yielded four alternative strategies for promoting parity of esteem: vocational enhancement, mutual enrichment, linkages and unification. *Vocational enhancement* emphasises the distinctive nature of vocational education on the basis of its characteristic content. Esteem for vocational education is linked with the standard of the content and pedagogy offered in vocational education and train-

ing. The German and Austrian reforms were based on the assumption that vocational training could also open for students a path to higher education qualifications. Under the strategy of *mutual enrichment* represented by the Norwegian and Finnish reforms, vocational education institutions, enterprises and general secondary schools cooperate with the aim of giving students more choices and more stimulating learning environments. The strategy brought together different types of schools on one hand and school and work on the other while still preserving their distinctive character. The *linkages* strategy, adopted in England and France, involved making vocational and general education formally equal by linking both to a common qualification structure.

These three strategies aimed to maintain a separate identity for vocational and general education. Under the *unification* strategy, by contrast, vocational and general education were merged into one another until they make up a unified post-16 education system. Sweden and Scotland represented such unified systems where the goal was to abolish the distinction between vocational and general learning as such.

Although the four strategies were not pure types and although developments in most countries included examples of more than one strategy, they have served as an useful analytic tool for studying current reform measures. The project's focus on individual strategies and two-country comparisons has brought out the importance of the different forms that each strategy could take in different countries. This reflected the different reform priorities and different strategic perspectives arising in work-based and school-based vocational education systems. Further, even in a country where a particular strategy was dominant, it is the strategic mix involved in any national reform that was crucial. Moreover, strategies and emphases might differ on different levels; reforms might, for example, be unifying on one level but have features of mutual enrichment on another.

Shared Learning

The aim of the second phase of the project was to compare, within and across the four strategies, the dimensions of upper secondary education reforms within the strategies dominant in each of the eight countries. Finally each national team undertook to prepare a Lessons section consisting of two parts: comments on the other partners' three strategies (policy aspects), and six lessons and questions arising from the other teams' experiences (practical aspects). The focus was on *the lessons and questions received from the other partners*. In their comments on the distinctive and noteworthy features of the strategy assigned to them for analysis the partners were asked to assume the role of an observer and pinpoint its critical features and problems. This section concentrated on the outcomes of the shared learning process and on reviewing what could possibly be borrowed from

the other partners' experiences.

In general, most areas where the parties felt that they had lessons to learn from the others involved flaws in their own reform, strategy or educational system. Most sources of lessons, apart from the forthcoming Scottish reform, are tried good practices. The strengths of the enhancement strategy were found to lie in higher-level vocational programmes, vocational key qualifications, a philosophy of learning and working assignments and shaping skills, and cooperation between school-based education and workplace training, those of the strategy of enrichment in local- and school-level decision-making in matters involving student choice across and within vocational and general upper secondary schools, the inclusion of apprenticeship in school-based education (the Norwegian 2+ model), combined teacher training and a core curriculum for guaranteeing lifelong learning skills. The features of the linkages strategy considered worth learning from were its voluntarist approach to key skills and the Vocational Baccalaureate degree as a pathway to employment. In the case of unification, team members found matter for thought in its weak and unvalued vocational track and its unified curriculum and an assessment system with no fixed end point and with a common school for all.

Vocational enhancement described very well the strategy adopted by Germany and Austria to promote parity of esteem between vocational and general education. Its distinctive feature was a reform of vocational education independent of any relationship that the system might have to the provision of general education. Vocational education was strengthened in its own terms by developing work-related skills and knowledge and by improving opportunities for students to progress to higher vocational education. The strategy was a response to the significant drop in numbers of students opting for the vocational route as well as to a drop in opportunities for apprenticeships for lower-level work. The Austrian approach has been to enhance vocational education by expanding opportunities for students to progress to higher education (through the polytechnics) and by extending opportunities for vocational education to embrace new occupations in office work and telecommunications. Germany, on the other hand, has a long tradition of higher vocational education through polytechnics. Its enhancement strategy has been more grass-roots or practitioner-based and has started from perceived weaknesses in the teaching methods used in vocational education, and in relations between vocational schools and enterprises. It has focused on curriculum and pedagogic enhancement, as exemplified by the Brandenburg Model Project at Schwarze Pumpe, and it has attempted to reduce the difference between general education and vocational education approaches to teaching and learning.

In their comments on the German and Austrian reforms, partners from other countries have brought up a number of important issues (Birke, Blumberger, Bremer & Heidegger, 1998). In view of the fact that the structures of

industry, and even the general living conditions, are broadly similar in the participating countries, as are the problems and challenges that the countries face, it seems remarkable that the reform strategies are so different across the various cultures. Thus, although the strategy of vocational enhancement is strongly rooted in the educational culture of the two German-speaking countries, the adoption of other strategies in other European countries raises the more general question as to whether vocational enhancement has possibilities for the future.

The strategy of unification represents a strong challenge to reforms still based on separate academic and vocational tracks. After all, the well-established European ideal of social equality points to this direction. On the other hand, the Swedish unified system with its streaming of the students into 2 academic and 14 vocational pathways could suggest that a reform on the level of the overall system may not change the opportunities available to individual students all that much. Similarly, the Scottish Higher Still reform might show that it is difficult to introduce a unified system which would encompass all (or, at least, almost all) members of an age cohort without leaving out a rather large proportion of low achievers associated with the work-based route. The Scottish example may even show that, given the inequalities in working life which are even now increasing, a reform which retains a strong vocational pathway may present better opportunities for low achievers because most of them are included in the dual system. It gives them some security with regard to employment and a minimum salary even if it may not offer them very promising career prospects.

On the other hand, the Scottish and also, although in a rather different way, the English example highlight the demands for flexibility and mobility imposed by modern societal trends. These requirements may not be adequately met by the strategies pursued in Austria and Germany. Although new occupational profiles are being designed and, at least in Germany, have already been partly introduced, there is considerable debate about the issue. It is sometimes argued that the idea of an even partly fixed occupational profile may counteract the demands for greater flexibility and mobility. In this respect the lack of student choice, especially in Germany, represents a severe problem. Within the German model, however, there are attempts to increase "internal flexibility" by giving students the responsibility for carrying out, in teams, their own "learning and teaching assignments".

However, a stress on flexibility and mobility creates problems for what one might call "vocational identity", the identity acquired through an extensive education and training for fulfilling the complex tasks of a skilled worker (especially in modern companies with flat hierarchies). From this point of view, the strategies of linkages and mutual enrichment have a strong appeal as they retain an important vocational track but provide com-

binations of vocational and general/academic education. It should be noted, however, that there are reforms under way in Austria, and to a smaller degree also in Germany, which realise the linkages approach. However, this reform strategy is dominated there by the vocational track. What is missing in Austria and Germany is the Finnish tactic of enriching the academic track with opportunities for vocational learning. The Austrian polytechnics could possibly be seen as partly doing that, although on the tertiary level. In Germany, the polytechnics follow a rather strongly academic path as does upper secondary academic education.

The Norwegian "2+" model of studying 2 years in upper secondary school followed by a 1- or 2-year apprenticeship could offer an important possibility for developing the dual system further. It represents the aim of an unified system whilst retaining different streams and, especially important in contrast to the Swedish case, it links school-based learning with learning in enterprises during an apprenticeship. This model could be adapted for the German case so as to make possible an integration of practical and theoretical knowledge, thus combining the "2+" model with the philosophy of the learning and working assignments, which aims to raise the esteem of practical know-how in relation to the status of abstract theoretical thinking.

The reciprocal study visits of German trainers and Norwegian teacher educators casted complementary light on the advantages and weaknesses of two fundamentally different reforms: the Norwegian reform was national and systemic, also covering initial teacher education, while the German reform was a single model experiment. The Norwegian reform represented school-based systems, the German reform dual systems. The areas where the parties found grounds for establishing further linkages for mutual learning were the German concepts of learning and working assignments, shaping skills, double qualifications and occupational pedagogy, and the Norwegian model of combined teacher training and 2+ model. The study visit by the French partners to southern Germany created an initiative involving new possibilities of cooperation between the Schwarze Pumpe reform project and the southern German states.

Remapping the Reforms

After restudying the other reforms, each national team remapped its strategy in relation to a common conceptual grid of 18 dimensions that were subsequently analysed comparatively in relation to the four strategies. From the national remappings nine reform trends could be identified which were found to varying degrees in each country. They were grouped as sub-dimensions of the four dimensions of connectivity (context, content, structure and process), ranging from new relationships between educational providers and enterprises and new approaches to teaching, learning and

content to making the system more inclusive and flexible and bottom-up reforms between schools and colleges and educational establishments and enterprises. Together these trends represented an overall strategy of creating a more connective systems of upper secondary education that are more capable of acting on their environment rather than just adapting to it.

Conclusions

The project has pinpointed many practical lessons which countries can learn from experience elsewhere, but these tend to be specific to the country which is learning the lesson. Thus the findings needed to be communicated to policy and practitioner audiences at country level, as well as at EU level. No one strategy was found to be superior or more effective than the others in an absolute sense; the effects of each strategy must be judged in relation to the educational system and the context in which it was introduced. A country may learn most from countries pursuing the same strategy, but it may also learn from other countries. In general, most areas where the parties felt that they had lessons to learn from the others involved flaws in their own reform, strategy or educational system. Many sources of lessons are tried good practices. As is usual in comparative research, one of the most important practical lessons from the comparison is a better understanding of one's own country, and of the strategy it is pursuing.

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QUALIFICATIONS WITH A DUAL ORIENTATION TOWARDS EMPLOYMENT AND HIGHER EDUCATION - INNOVATIVE SCHEMES OF SEVEN EUROPEAN COUNTRIES

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This contribution is based on a European partnership project¹ investigating qualifications with a dual orientation towards employment and higher education (dual qualifications). The initial comparative analysis of innovative schemes of dual qualification across seven countries is followed by an investigation of three transnational issues of dual qualification:

- integrated learning processes;
- supporting transitions to higher education;
- tracing careers.

Finally, conclusions are drawn about the potential of collaborative research in a LEONARDO partnership.

¹ The underlying project INTEQUAL (1995-97) has been carried out with the financial support of the European Commission in the framework of the LEONARDO DA VINCI programme. The present contribution has been prepared in collaboration with *Alan Brown*, IER, University of Warwick; *Werner Kusch*, ISB, Munich; *Lillian Larsen*, HIAK, Oslo; *Owe Liljefelt*, Stockholm Institute of Education; and *Trudy Moerkamp*, SCO, University of Amsterdam.

Survey: Innovative Schemes of Dual Qualification in Comparison

One of the basic issues in vocational education and training in EU countries, highlighted in the action programme LEONARDO, is how to increase the attractiveness and status of initial vocational education and training. Essentially, this is a question of improving the quality of vocational education and training.

A specific approach initiated in a number of countries is to provide the option for trainees or students of vocational courses to acquire qualifications for university access alongside their vocational qualifications. This is based on varying degrees of combination or integration of general and vocational education. It is connected with efforts to achieve parity of esteem between vocational and general education, and between work-based and knowledge-based learning.

The resulting qualification has a dual orientation towards employment and higher education (dual qualification). The present project focuses on an in-depth analysis of a selection of recent schemes of dual qualification which have been implemented in seven countries of the EU and EFTA. The schemes are characterised by features including the following:

(A) Dimension of the schemes within the education systems. According to this criterion three groups may be distinguished:

1. Schemes which extend over an integral part of the whole educational sector such as the vocational programmes or streams within the comprehensive school systems of Norway and Sweden;
2. Schemes which refer to individual courses or qualifications, e.g. the Vocational Baccalauréat (Bac Pro) in France, the General National Vocational Qualification (GNVQ) in England, the long courses of senior secondary vocational education (MBO) in the Netherlands and the WIFI Academy courses in Austria;
3. Schemes representing pilot projects within the established systems of vocational education and training (Germany: Bavaria and Brandenburg).

(B) The balance of dual orientation. While all schemes allow for a dual orientation, they differ in the relative weight attributed to either employment or higher education. Several of them put the emphasis on employment as the prior aim (the schemes in Austria, France, the Netherlands and Sweden). This is likely to apply to the vocational streams in Norway as well, although the Reform 94 aims at a balance of the two orientations for the total provision of upper secondary education. The two remaining

schemes (in England and Germany) imply a fairly equal weighting of the two progression routes.

(C) The level of vocational training / the target groups. Most of the schemes (in England, Germany, the Netherlands, Norway and Sweden) are part of the initial vocational training which is provided at upper secondary level for 16-19 year olds. The English, Norwegian and Swedish schemes are also open to adult students. The French scheme is specific in offering advanced education and training for students who have already completed initial vocational courses or certain stages of them. In Austria, the scheme is exclusively geared to adults who are already qualified in a vocational area.

Several aspects of the structure, contents and didactics are relevant for the schemes of dual qualification:

Flexibility in curriculum design. Flexible structures of the curriculum, with a frequent use of modular patterns, have been introduced in the schemes of several countries. They are above all intended to connect and in part integrate general and vocational subjects or units of learning.

Emphasis on developing personal competence. Several concepts and terms used in the various national schemes centre on a new approach to learning which aims at developing personal competence in a complex and active way and which goes well beyond the division into general and vocational abilities.

Collaborative work of teachers. The integration of academic and vocational qualifications calls for a closer cooperation between general subject teachers and vocational teachers. These two categories of teacher represent different backgrounds and traditions, so that the functional integration of teaching is difficult to operate. In addition, the teacher in an active learning environment takes over a new function as adviser rather than instructor and has to cope with independent-minded students who have a say in their own learning process.

Cooperation between schools and enterprises. Most of the schemes link school-based and work-based learning, including mandatory practical assignments (France, the Netherlands, Sweden), supplementary ones (England) or traineeships (Norway, Germany). This approach implies a need for functional cooperation between schools and enterprises, and between teachers and trainers or workers.

A key question which has accompanied the whole investigation is the extent to which vocational and general education are or can be integrated. The comparative analysis takes account of two dimensions which are assumed to be relevant for the qualifications with dual orientation: (I) the relationship of education and training to skilled work and (II) the relationship of general education to vocational training.

The curricula of the schemes provide for a variety of combinations involving vocational and general education, ranging from the additive to the integrative type of approach:

- (A) Separate general/theoretical subjects;
- (B) Vocational application of general/theoretical subjects;
- (C) Education and training related to transferable skills;
- (D) Action-orientated education and training (projects).

The conclusions drawn from the comparison include the following points:

There is, altogether, an emphasis on the additive combination of vocational and general education (A), with the latter being extended particularly in individual options. Three schemes focus on this (Sweden, the Netherlands, Norway), and most of the others include it as a vital part. The relevance of the additive combination seems to be fairly independent of the scheme's relationship to skilled work.

Next to this, the vocational application of general subjects as the first stage of integration (B) is relevant, both as a focus (England, Germany: Bavaria) and in combination with other stages of integration (Austria, France). The relevance of applied subjects can be observed in schemes with differing relations to skilled work.

The advanced stages of integration – training related to transferable skills (C) and action-orientated education and training (D) – are characteristic of two schemes (Austria, Germany: Brandenburg) which have, at the same time, the strongest relation to skilled work. These schemes display the potential of work-based education and training for the development of transferable skills, including study skills. Advanced forms of integration, particularly project work, are also represented as components of all the other schemes.

The evidence suggests that several ways of combining general and vocational education (A to D) are fairly independent of or easily adaptable to different categories of courses. If this proves to be the case, it suggests that there is considerable opportunity for exchange and transfer of experience across schemes and national systems.

It is also apparent that the schemes of dual qualification, in this specific function and in their national context, apply or indeed create both innovative course structures and curricula and didactic approaches, all of which are of wider significance for qualitative advance in vocational education and training.

Issue 1: Integrated Learning Processes

The theme of this study is a preliminary presentation of findings which focus on learning processes with empirical references to some selected learning situations. The partners from Germany, Norway and Sweden present case studies and other relevant empirical data, and discuss the research question with reference to institutional factors and theoretical points of view.

The problem under discussion is how to promote dual competencies and integrated learning processes.

To start with, differences in the education systems in the three countries need to be considered. These differences set limits to what can be studied, but also offer interesting points for comparison. However, on most issues or variables of relevance in this study, the Swedish and Norwegian systems are also comparable because the cases chosen for investigation lie within the ordinary school system.

The Swedish schools have originally been chosen by the Swedish Department of Education as reference schools in a national evaluation programme. The Norwegian cases have been chosen in order to study project work as a way of working with integrated learning processes.

These two countries have both been through senior secondary school reforms of far-reaching significance for the vocational streams. The question under consideration in studying these two systems is the extent to which a reformed educational system promotes the development of dual qualifications, and how the system provides for integrated learning processes.

The national studies offered a documented framework (goals, syllabuses and timetable) for the provision of dual qualification and integrated learning processes. They also suggested possible problem areas to be dealt with.

The German system is different from the Scandinavian ones. Consequently the possibilities of comparison at school level may not be so obvious. Even so, the particular German (Brandenburg) model chosen for this project also aims to overcome the basic division between vocational and general education, and to offer attractive educational possibilities to young people. The German case study is a pilot project («Schwarze Pumpe»), where the researchers have the opportunity to plan for the learning processes and to study the results closely.

These case studies may be of interest at two system levels:

1. The organisational level of schools;
2. The organisation of teaching /learning situations at classroom/workshop level.

What methods generate conditions for students to develop integrated qualifications? At the classroom or workshop level the partners looked into how teachers organise the learning conditions between and within subjects. The main focus is to identify methods that generate integrated learning processes (and produce integrated competencies). A basic assumption will be that certain teaching methods generate favourable conditions for students to develop integrated competencies. One important learning approach thought to generate such learning/competencies is centred on task-, problem- and project-based methods.

In this study the three partners provide different cases, also respecting teaching methods. The Brandenburg model has been designed as an innovation programme based on work activities as the foundation for developing conceptual frameworks (knowledge/theory/Gestalt). The Norwegian cases mainly focus on project work situations. The Swedish cases focus on different teaching methods. In analysing and comparing these different cases/teaching strategies from the perspective of learning outcome, the different cases can function as dependent/independent variables according to the focus chosen in each case.

Research methods include observations, interviews, questionnaires, matching different models of organisation, methods of teaching.

Issue 2: Supporting Transitions to Higher Education by Students From Vocational Pathways

This investigation is being carried out by partners from England and the Netherlands. In both countries those coming from vocational pathways are more likely to drop out of HE than those coming from general education. As part of the European Leonardo INTEQUAL study of integrated qualifications, the researchers investigated the steps that could be taken to increase the likelihood of students from GNVQ and MBO, in England and the Netherlands respectively, being successful when they move into HE. These steps included

- setting up partnership or compact arrangements between institutions in the two sectors;
- offering specially enhanced or enriched GNVQ or MBO programmes; and
- paying particular attention to the development of those skills and qualities associated with being successful in HE.

The researchers draw their findings from their own research on recent developments in the relationship between MBO:HBO and GNVQ:HE, particularly in relation to curriculum development in the areas of health and social care, engineering and business studies. This research is coupled with secondary analysis of research on the knowledge, skills and personal qualities required to be successful in HE, and a consideration of how to increase prospects of progression to HE while also maintaining an orientation towards the labour market as a fundamental aspect of a qualification with a dual orientation.

In both countries HE institutions would like to see the vocational pathway strengthened academically in order to ease transition into and through HE. The evidence showed that students also share some of these concerns. Interestingly, the problems with transitions to HE of the students from full-time school-based vocational pathways in the two countries appear as almost mirror images.

In the Netherlands, the strong vocational orientation, with a clear focus upon entry into the labour market, and early specialisation within mbo, can create particular problems. For example, if mbo graduates in hbo found they did not like and/or were not successful in hbo, then they were very much more likely than other students to leave HE altogether. In the light of this it is significant that mbo graduates would have liked more attention within mbo to have been given to a set of skills relating to career development (knowledge about conditions of employment; interview/application training; and careers guidance). It is as if having made such an early commitment to a particular direction, these students want continuing information which will enable them to check whether this is the most appropriate path for them to follow. The other set of skills hbo students, who had graduated from mbo, would have liked greater emphasis upon in mbo were the generic ones of information technology; organisational skills; and writing reports.

In England, GNVQs had a much less distinct vocational orientation, being more akin to applied general education. There is debate about whether the vocational orientation should be downplayed to this extent, but it does mean that former GNVQ students have a wider set of options for HE study than their Dutch counterparts. The former GNVQ students, now in HE, also identified that one of the strengths of GNVQ is the emphasis upon generic skills like information technology; organisational skills; communication skills and so on. Instead the former GNVQ students were likely to feel most disadvantaged by their lack of sufficient depth of knowledge for particular HE courses. Whereas the mbo courses give students a more substantive knowledge base prior to entry into HE.

The challenge for the future for both qualifications is to develop a substantive knowledge base, and a range of core skills/key qualifications linked to the ability to communicate, the ability to work as a member of a team,

flexibility, a continuing commitment to learning and the like. This should give former students a solid platform from which to enter employment or higher education. One final thought is related to the Dutch system of having an extended vocational pathway, as compared to the academic pathway. The extended vocational pathway serves as a valuable lesson for an English system, in which the transition into, through and out of Advanced GNVQ programmes seems unduly rushed given the scale of the task to be achieved.

Issue 3: Tracing Careers

The partners from Germany (Bavaria), France and Austria are tracing the career paths chosen by participants who have attended educational institutions leading to a dual qualification. The dual qualification route involves educational pathways which in addition to offering certification in initial or further vocational training, also offer a university entry qualification. This qualification is attained in the German (Bavarian) pilot project within the "dual vocational education system" ("dual" with the different German meaning of VET provision at both enterprises and schools); in France by way of state sponsored full-time educational pathways and in Austria by a supplementary training programme. The goal of the investigation is to determine to what extent pathways of vocational dual qualification influence graduates' subsequent career paths.

One focal point of the investigation will lie in the assessment of the percentage of graduates entering industry related jobs as against those choosing to pursue university studies.

The evaluation will draw on results stemming from research data compiled in the afore-mentioned states. The French data is taken from a poll that interviewed approximately 3000 graduates who attained the "Baccalaureat professionnel" in 1992. The German data comes from evaluative supervision management investigations conducted within the context of the Bavarian pilot project of dual qualification "Duale Berufsausbildung und Fachhochschulreife", with approximately 100 participants. It is anticipated that this Bavarian pilot project will run at least until the year 2001. By the summer of 1997, approximately 100 participants with commercial-technical vocations will have completed their dual training, and will have qualified to attend a German Fachhochschule (institute of higher learning combining academic studies with practical work experience). In contrast to the French as well as the German students, the Austrian participants are being trained at WIFI-Academies (specialized economic colleges), and attend evening or weekend classes while working full-time. Approximately 300 Austrian questionnaires will be drawn on and included in the joint

evaluation process. The evaluation aims at pinpointing culture-specific as well as transnational findings.

An important fact to consider is that the Austrian WIFI-Academies do not constitute educational pathways (institutions) sponsored within the framework of a state sponsored school administration, but instead comprise educational opportunities offered by private enterprise on behalf of Austrian industry.

Moreover, while the French and German training pathways were designed for youths within the framework of vocational and general (mandatory) initial education, the Austrian paradigm is one offering supplementary education for "mature" skilled workmen (adult education – the average participant being 25 years old). The educational contents and demands placed on the participants differ accordingly.

The following pieces of data concerning the groups under investigation need to be evaluated:

Individual personal data and evaluations upon completion of dual-qualifying education. (gender; age; previous educational level; previous vocational training; if relevant, choice of field upon university registration with desired end-result; if relevant, field of employment entered; evaluation of the dual qualifying educational measures)

Data on dual qualifying educational measures (factors which motivated participants to participate in the dual qualifying measure; number of years that lie between the last educational or vocational training and the entry into the dual qualifying course; parents' educational background)

Empirical data on dual qualifying educational measures (total number of national participants -as of May, 1997; effects the dual qualifying educational measures have had on the standard traditional educational system).

Outlook: Potential for Collaborative Research Under LEONARDO

To conclude, some aspects of the methodological approach in this project are highlighted.

The project, being supported for a two-year period, has a two-phase structure: The first phase (year 1) preparing national case studies leading to a transnational comparison; the second phase (year 2) carrying out topic studies in teams.

The *first year*, which centres on national case studies and comparison, is intended to lay the basis for partnership research:

- The central concern of the project has to be identified and investigated in the national context. This analysis is guided by a joint set of research questions which leads to a common structure of the national case studies. By doing this together, for instance in team work, the partners not only learn about each other's education system, but also learn to look upon their own system in a transnational context.
- The comparison highlights differences and similarities of the systems/phenomena, and alternative ways in which the countries concerned aim at the same objectives. As a result, systematic information is produced and questions for joint research (second year) can be defined more precisely.

The joint analysis in the *second year* centres on several studies. In both cases, partners of two or more countries work in collaboration on selected issues and according to a joint research design. The project includes joint studies on the character of the learning process, on the assessment of competence and on patterns of individual pathways and guidance.

In view of the short period of time available for the project, the joint research, wherever possible, builds on up-to-date national investigations. For instance, for studying learning processes (issue 1) national pilot projects already under investigation are being included. The work on the skills to be successful in higher education (issue 2) will draw on existing studies and involve mainly secondary analysis. Or questionnaires carried out in the countries involved (issue 3) form the basis for preparing joint interviews related to selected aspects of investigation.

A major aim of the project is the transfer of ideas between researchers, politicians and practitioners. This is pursued as part of the approach in both phases (years), e.g. by carrying out interviews with experts/politicians in preparing the national case studies, by focusing questionnaires on students/graduates of the schemes, and by presenting interim findings at workshops with politicians and practitioners.

What are the characteristics of the kind of partnership project outlined above? It may be helpful to distinguish between *what* is done in the project and *how* the partnership operates.

What: The investigation progresses from national studies to transnational comparison and then to the investigation of issues which cover several countries. Experience from this project suggests that each of these stages has a purpose of its own and a specific place in an order of inquiry. In particular, the joint investigation of selected issues across countries presupposes a close knowledge of national cases and their comparative assessment.

How: The degree of collaboration proceeds from relatively separate individual work to team work and total partnership work (the latter operat-

ing in alternation or combination). The individual work of partners is already distinguished from ordinary national research in that specialists from each country contribute to the joint project and are guided by the partnership.

Team work as well as work in the partnership as a whole operates in both comparison and cross-country investigation. Collaboration in small teams gains from a close knowledge of each other's system, methodology and experience. Joint work in the total partnership, in contrast, requires a high degree of adaptability among all partners, an efficient mechanism for communication and a considerable amount of overall coordination.

National studies and transnational comparisons carried out by individuals or teams in a coordinated framework have already been established as an approach typical of CEDEFOP and OECD projects, while transnational investigation pursued by a collaboration of partners (*collaborative investigation*) is likely to be a major characteristic of LEONARDO projects. However, this particular approach presupposes joint comparative work as a preparatory stage.

The research pattern described above may be limited in that it applies to certain themes and situations only, and even in this context there may be alternative approaches. It would, therefore, be worthwhile to set out distinctive patterns of research developed over a broad range of LEONARDO S & A projects. The European-level project EUROPROF, for instance, involves quite a different methodological perspective. A discussion on these approaches could provide useful input for subsequent project proposals.

A crucial question concerns the impact which LEONARDO S & A projects may have beyond the two years in which they have been supported. There is little chance of prolonging the total partnership and overall coordination outside the framework of EU support. What can survive and be developed further, however, is the maintenance of collaborative links between teams of partners who have been able to establish common ground in terms of research areas and mutual support. This is, again, the special effect of setting up partnerships in small semi-independent units from which grass-roots initiatives can emerge.

Another effect is the development of a network of researchers in the context of different projects. This, however, is dependent on a specific framework of initiative and support. There have been wide-ranging ventures by CEDEFOP (Pekka Kämäräinen) for several years, and this LEONARDO workshop points to the possibility of extending the dimension of such activity.

Interim Results of the Partnership Project

- Manzing, S. (Ed.). (1996). *Qualifications with a dual orientation towards employment and higher education: a comparative investigation of innovative schemes in seven European countries. INTEQUAL Report I.* Berlin: Wissenschaftsforum Bildung und Gesellschaft e.V. (WIFO).
- Manning, S. (Ed.). (1997). *Qualifications with a dual orientation towards employment and higher education: a collaborative investigation of selected issues in seven European countries. INTEQUAL Report II.* Berlin: Wissenschaftsforum Bildung und Gesellschaft e.V. (WIFO).

BILDUNG THROUGH VOCATIONAL EDUCATION

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Context

The division between vocational and academic education has its roots deep in European history. At the very heart of this division lies the German concept "*Bildung*". The basic idea behind *Bildung* is that individuals must make themselves into something worthwhile through their own efforts. The development of human being is thus seen as a process of becoming an educated person through one's own actions. The idea of *Bildung* has opened up at least three different routes to worthiness: the acquisition of *Bildung* through religion, through science and scholarship, and through a vocation.

The well-known slogan "*Bildung durch Wissenschaft*", *Bildung* through science and scholarship, described an effort to escape the constraints of the Church and expressed a belief in individuals' own ability to cultivate their minds. At the very beginning "university" was a student community and "*Studium*" a name for places where scholars' corporations resided. "*Studium generale*" meant that the content of their studies went beyond narrow local concerns. The division between academic and vocational studies was a question of privileges and power. The result of all this was that today we see academic *Bildung* as absolute, truthful and universal, above any particular interests, and vocational *Bildung* as relative, instrumental, limited to specific concerns and tied up with particular interests.

The differentiation between academic and vocational education is a very essential aspect of the European tradition and it is therefore impossible to overcome it through one type of education getting the upper hand, through the supremacy of one or the other, irrespective of whether it would entail the scientization of vocational education or the vocationalization of academic education. The mission is, instead, to create a new kind of interdependency between the two traditions so as to generate a process of mutual enrichment.¹

Bildung

The German concept '*Bildung*', perhaps akin to the English word "cultivation", is almost impossible to translate into English. In it we have two words, image and tilling, put together to indicate a possibility of seeing the development of an individual as a process of becoming an educated person through one's own actions and deeds.

Bildung is always linked to some aspiration. Originally the intention expressed by the concept was that of cutting oneself off from this world and preparing for eternity. The basic idea behind *Bildung* is apparent here: one must make oneself into something worthwhile through one's own efforts. The idea of *Bildung* has opened up at least three different routes to worthiness: the acquisition of *Bildung* through religion, *Bildung* through science and scholarship or *Bildung* through a vocation.

A cultural interpretation of the concept advocates classical *Bildung* and the virtues expressed in it. However, although the descriptions of the "free man" are attractive and well-founded, they involve two problems: they portray a free man who realizes his freedom by means of the work of non-free people, that is slaves and women. Also, if one was not fated to have freedom and enjoy civilized culture, one could not achieve it. In the Middle Ages *Bildung* gained a new, more optimistic starting point: everyone could acquire it through religion. Every person had to educate themselves in order to be acceptable to God.

The Myth of the *Academe*

The well-known slogan "*Bildung durch Wissenschaft*", *Bildung* through science and scholarship, described an effort to escape the constraints of the Church and expressed a belief in individuals' own ability to cultivate their minds. This slogan was based on individualism, perhaps even on the idea

¹ See Gruschka, 1988; Heydern, 1980

of aesthetic individualism: man must put himself in God's place. Science became a new secular church with its accompanying institutions.

As we know, presenting Plato's suburban school at "the olive grove of Academe" as the origin of universities is a myth manufactured by the university scholars.² The University of Bologna – to take an example – was a student community (*universitas scholarium*) for legal studies in the middle of the 12th century. Its students, coming from all over Europe, were "aliens but highly desirable ones as they brought with them a promise of fame for the city and prospects of income increase for its citizens (house rent)"³. The student community was eager to gain political and economic privileges. According to Roman civil law, a community is a corporate personality with a set of rights and obligations, but as legally aliens the students were only artificially citizens of the city. In such a position, aspiring to privileges that were denied the apprentices of crafts and trades of the city, really required a "masterpiece of juridical sophistication" "The ancient imagery of a knowledge hierarchy with the *artes liberales* on its higher levels and the *artes serviles* on the bottom line was reanimated by the 13th century jurists of Bologna for practical and political reasons."⁴

'*Universitas*' was, then, at the very beginning a community of students while '*Studium*' was a name for places where scholars' corporations resided. '*Studium generale*' meant that the content of their studies went beyond narrow local concerns. The division between academic and vocational studies was a question of privileges and power. The result of all this was that academic *Bildung* was easily seen as absolute, truthful and universal, above any particular interests. This is also an excellent rationale for making academic *Bildung* an aspect of the glory of national truth, as was done in many countries later on.

Vocational education, by contrast, was relative, instrumental, specific and tied up with particular interests, because it was linked with working life and because its basic nature was not national but international. When later on the differentiation between art/fine art (*Kunst/Schöne Kunst*) was established to give art and art education the social prestige of a science, *artes serviles* lost also the idea of aesthetics. The theory of knowledge and the theory of beauty are for social reasons detached from the theory of *techne*. After these operations we can go on to talk about the training in/formation of the skills of the labourer. Academic *Bildung*, then, expresses not a universal but a particular social interest – a call for power.

² See Dabrowski, 1990

³ Dabrowski, 1990

⁴ Dabrowski, 1990

Vocatio

Another call has also been heard in the history of education – the call for a profession. Although even here the starting point has often been the individual's preparation for eternal life, this call has also been associated with a bond with other people: it is possible to make oneself worthy through other people by making oneself indispensable in the eyes of others. Thus, here *Bildung* means becoming worthy in the estimation of other people, not only in one's own estimation. *Vocation* has become a *profession*.⁵

This road to *Bildung* differs in its intention from the road leading to academic *Bildung*. Traditionally academic *Bildung* seeks to escape from the world and distance itself from it, so that the world can thus be seen more clearly, that is, more truly. Ultimately the aim is to write a great illuminating book about the world, to recreate the world – and to rise above the hurly-burly of one's own restless era.

A profession, too, is always linked to an aspiration: the desire to make things and even people to take on a new form. A profession is not related to the idea of escaping the world; rather, a profession requires going out into the world: the essence of the world can be learned only by working on and with it. A profession makes it possible to create one's own durable internal world, which also involves other people, as a source of *Bildung* – that is, freedom – not as barrier to it.

Vocational Bildung as Modern Bildung

What was then the basis of the differentiation of *artes liberales* and *artes serviles*? It goes as follows: When you are forming, through a working process (*poiesis*) the object of your work, you cannot reform yourself, and when you are forming yourself through activity (*praxis*) you are not forming a separate object residing outside you but yourself as a person.

In fact, it was one of the starting points of the modern times to say that you can – in principle and in a philosophical sense – educate yourself through work. It means that in principle and in a very fundamental sense vocational *Bildung* is modern *Bildung*. In the first two decades of the century the realization of this fact confused the academic tradition.

The practical solutions to the problem were less promising: In the process of forming the modern national state, the idea of *praxis*, the policy of the national state, was the primary consideration. Science and scholarship,

⁵ In English we have an interesting distinction between "vocation" and "profession". *Vocation* means that somebody is calling you, but *profession* that you are working on the basis of your own confession. The German word "*Beruf*" means also calling. When I use the word "profession" here I do not mean to exclude occupations or vocations from my discussion.

and, later on, art, the fine art, had to give their support to the national state. And that was a question of money. In return they won the national glory. All this meant that the third element, work, *poiesis*, lost the idea of knowledge and beauty, a possibility to generate through work general cognitive or aesthetic processes, or new social meanings; these tasks were now the preserve of science and scholarship and fine art. "The Scientific management" of work expresses the standpoint of science very clearly. Frederic Taylor writes in his book "Shop management":

"My system is aimed at establishing a clear cut and novel division of mental and manual labor throughout the workshops. It is based upon the precise time and motion study of each workman's job in isolation and relegates the entire mental parts of the tasks in hand to the managerial staff." (Frederic Taylor, 1911)

As regards art, its relation to work was much more complicated: We have a very problematic social classification – and thus a social skirmish – of craft, art-craft, craft design, design, art design, art industry, art, fine art. During the first decades of this century the fine art gained what was clearly a new position: Art no longer merely reflects beauty of nature but is, instead, searching and forming new meanings.

The result of the whole process was clear: we can easily make a division between the academic and the vocational tradition on this basis: the academic represents the tradition of knowledge and truth, fine art the production of social meanings and experience of beauty in the context of national citizenship. Work and labour, on the other hand, are special skills without their own aims or basis; they are for labour and the labourer. Academic education is – then – *vocational* education for those, who become leaders and vocational education *general* education for those, who will be led, as the classical saying aptly expresses the matter.

Are these distinctions, made in the first modern or early industrial society still powerful enough? What happens if we take seriously the idea of a learning society?⁶, that is, the explosive development of knowledge-intensive industries and media and the changing place, time and function of learning?

At the structural level, the main division within the educational system is, as we know, that between academic and vocational education. We know also, that since the Second World War, the comprehensive education and the general upper secondary school are formally providers of liberal education, i.e. their curriculums are based mainly on science and the humanities. As late as the year 1992 the general upper secondary school was

⁶ The idea of "Learning society" was used by Torsten Husén as early as in the 1970s, but discussion in Europe is nowadays stimulated by the EU White Paper. See the Whiter Paper on Education and Training, 1995

defined in Finland as an institution giving students "the national core *Bildung*", without any reference being made to vocational *Bildung* or to students in vocational education.

We can see three fundamental bases for learning: science and scholarship, praxis and work⁷. In traditional thinking, *theoria*, representing science and scholarship aims to form the ability to see the world as it is, while the *praxis* involves a struggles for the ability to make the world a better place through activity, *poiesis* the production of beautiful artifacts. The first modern solution formed an alliance between science and art, took *poiesis* from them and defunctionalising it by subjecting it to the outside control of science and by excluding the questions of beauty from the working process.

A new solution – late-, post- or second modern, as you wish – is needed because unlike in the early industrial society between a worker and the object of his or her work there is no longer a tool or a machine but productive machinery as a whole. The machinery has learned to use language and language has learned to use machinery, and still more: the language itself is a part of the machinery of production. To be more exact: What we have here is not only the machinery, a technical advance or a productive body, that is a biological organ, but a – if one may say so –, a language-like *texture*⁸ surrounding us.

As a result of this textualisation of our everyday life, the economic capital has become ever more dependent on human, social and nature-based capital, that is, on human qualifications, social confidence and natural resources. The main focus of all the texture around us is an ability to read the value residing in living work that has already departed from the dead products of that work in such a way that we can, once again, relate living work to its products without any loss of economic, human, social or nature-based values. This is not only a question of life and death for any production unit or economic system but also a struggle for the social existence of any social class.

The problem is, that the dead products of living work are not in the literal sense a crystallization of living work, which is how we easily see them, but social representations, "hieroglyphs" of the work already completed.⁹ They express a social way of thinking (Gedankending). It is – to put

⁷ Of course one can immediately raise the question of learning via the Media. In this context, however, I see Media as a medium, that is, as an element mediating between the three bases of main concern here and, I must admit, at the same time, as an element that fundamentally restructures place, time and style of learning.

⁸ The etymology of *texture* goes back to Latin and Greek: In Latin, *texere* is to weave, *textura* (texo+ura) is the art of weaving, *texo* means putting together or constructing a complex structure, *textus* a bound; in Greek *Texn* is the art of metalworking, while in old India *taksán* was a carpenter. *Texture* also refers to the (complex) structure of a surface.

it very shortly – precisely vocational *Bildung*, that is used in reading and writing this social *Gedankending*. Why?

Allgemein Bildung, the general cultivation of academic tradition, science and scholarship and fine art was based on separating *theoria* and *praxis* from *poiesis*, on productive leisure time to be used for thinking deep or/and high thoughts, on principle of *arcanum*, that is, the idea that authentic reality is anchored not in sensible reality but in some substance behind it, in insensible reality. Besides beings throughout the early industrial modern usually seen as nationally oriented, *Allgemein Bildung* of this kind, also formed in its best works a horizon around the problems of its own era by cross-illuminating everyday life and its problems.

The *Allgemein*, general of vocational *Bildung* is based, in principle, on the educative feedback generated by the object when it is worked on. If you hit your axe on a stone, you learn very quickly not to do it a second time. When the means and the objects of work manifest themselves in a textual form, it is impossible to perceive this kind of feedback without a reflective, conceptual means to open the feedback. The worker must master the language of the machinery and of the object of the work. What is most important, they have to be able to relate themselves to the objects and products of their work, not only through the given vocational means and concepts, whatever they may be, but also through a social way of thinking (*Gedankending*). This third language is the language of vocational *Bildung*. The general element of vocational *Bildung* is thus bound up with the materiality of social texture, that is, with a reflection of dead work. This *Allgemein* is, then, never merely symbols of or texts by a productive mind, but an unfolding of the hieroglyph of real work, already completed.

Unfortunately, there is a fatal impotence in both types of *Allgemein Bildung*. Academic and vocational *Bildung*. The academic tradition provides the means to read and write a book about the world but only through its social position the power to change the world. The vocational tradition has the means of change but only inside the social way of thinking. It has not enough power for cross-illuminating the praxis of texturing the products of work already completed.

Together the two traditions might have something that neither has alone. If we reintroduce the questions of beauty, truth and good life, that is esthetic, science and scholarship, and politics into the *poiesis*, we have a possibility to cross-illuminating the social way of thinking through the most concrete and general social bounds, through the bonds of living work.

⁹ See Kurz, R. 1988.

Bildung Through Vocational Education: The Strategy of Mutual Enrichment

The differentiation between academic and vocational education is a very essential aspect of the European tradition and it is therefore impossible to overcome it through one type of education getting the upper hand, through the supremacy of the one or the other, irrespective of whether it would entail the scientization of vocational education or the vocationalization of academic education. The mission is instead to create a new kind of interdependency between the two traditions so as we are able to generate a process of mutual enrichment.¹⁰

As we saw earlier, the very fundamental roots of this differentiation between academic and vocational education go back to classical Antiquity, but the Reformation, the birth of labour markets, the role of the state in the process of the formation of (civil)society have all contributed to determining how important and central the distinction between vocational and academic education has been as an influence on the structure of European educational systems.

Traditionally there has been a strong association between academic education and knowledge and competencies related to life outside work, that is, the public life of a gentleman or a citizen. By the contrast, the work of a craftsman and the vocational tradition have been much more closely associated with skills belonging to the world of work. When we discuss the differentiation between vocational and academic education, we are at the same time discussing the differentiation between citizenship and the labourer/worker.

The Anglo-American tradition sees the very position of a citizen in the terms of the marketplace, and after the Second World War the whole concept of the citizen has been redefined from the point of view of the social state, which partly excludes questions linked with working life.¹¹ In the German tradition that of the traditional craftsman citizen represents the basic position of citizenship. The very basis of the concept of citizenship is an expression of community, of a shared house, not of the marketplace. This means that the idea of the social state has not led to a purely market-based idea of citizenship; rather, the community has developed in the direction of society while still retaining some features of the traditional community, as is seen in the German system of vocational education.

¹⁰ Mutual enrichment is one of the four strategies for establishing a new relationship between academic and vocational education in upper secondary education in Europe. See Volanen 1995, Lasonen 1996.

¹¹ See the discussion on Marshall in Turner, 1993

In the history of the birth of labour markets in Europe we can see at least two very different kinds of mainstream: 'vocalionalization from above' (Germany, France) and 'vocalionalization from below' (England).¹² In the first case the state has exerted a very strong impact on the construction of the labour market, the occupations and vocational education. In the second case market processes have been more decisive.

In the Nordic countries, at least in Finland, Sweden and Norway, we have some peculiar combinations of these two pairs of distinctions: characteristically vocalionalization from above together with the central planning of vocational education and labour market has been quite a strong feature of Nordic societies, but at same time citizenship is understood in terms of the labour market and the state. This is possible only under the assumption that society is generated by the state to ensure general welfare. However, today the differentiating between state and society is a powerful trend in the Nordic countries.

We can, then, see three educational systems emerge from these two differentiations: vocalionalization from above vs. vocalionalization from below and market-based vs. community-based society as the historical basis of citizenship (see Table 1).

Table 1. Vocational education and citizenship

Vocalionalization	The Basis of Citizenship	
	community-based society	market society
from below	D Learning society	B England On-the-job Education
from above	A Germany Dual Education	C Nordic School-based Education

My hypothesis is that to be able to approach the "learning society" (D) all these three approaches (A, B, C) require a change in the relationship between vocational and academic education because of the following trends in the working and social life

1. The idea of "the learning society" implies that the process of reflection, some form of learning is indispensable in all social activities.

¹² Siegrist, 1990. Konttinen, 1991. I use here the theory of professionalization under the assumption that the distinction between "from above" and "from below" is applicable also to other types of occupation.

2. The production and work process must be opened to learning. As regards production units this is a life-and-death question.
3. New production concepts/models question the traditional differentiation between citizenship and the worker/laborer: every worker is more or less required to work as a citizen.
4. Open and complex working situations, impossible to prepare for beforehand by issuing rules and directives, are increasingly common. More versatile skills and more broad-based knowledge – concrete *and* general skills and knowledge – are needed to handle such situations.
5. Vocational competence means the ability to increase the output and the quality of the commodities made by the production unit. An increasingly important question is how concrete and rich a concept is the term "productivity" that we are using (does it also embrace also the questions involved in environmental, social and human capital).

We can see that the measure of *Bildung* is currently being defined in a new way. Alongside the measure of national *Bildung* comes a time-related qualifier. The yardstick of *Bildung* is linked to an ability to define and solve the basic problems of our age. Let it be added – for the sake of clarity – that of course this also requires knowledge of other ages in order to provide cross-illumination on our own age. Ultimately it is a question of how we should implement practical humanism and fully matured *Bildung*. The goals, significance and meaning of human activity on the one hand and the tools for carrying out that activity on the other should not be separated from one another, nor should people be cut off from each other on this basis.

It is a long journey from being a master in a medieval guild, from the "nobility of the common man", to modern-day professions. Nor will society any longer open up as an organic whole or mechanical machinery in which each individual can work for the good of all as a differentiated cell or as a cog. Vocation has increasingly become a job. All individual bonds with the whole have been transferred outside the work of given profession, to be mediated in public, in a public domain. This public domain is not our own creation either but, rather, packaged publicity.

It need not be so. As professionals we all find ourselves confronted with a conflict between our own work and the basic problems of our era: how should I solve the problems I face in my own work if I look at them as, for instance, as a parent, a citizen or a human being, not just as an employee. What solutions emerge for my examination when I consider my professional problems from all these various angles? The motives involved in our work are clearly expanding beyond the boundaries of our various occupations.

The reality of *Bildung*, its link with life on earth is in the last analysis decided in actual work in an occupation. The era-relatedness of a *Bildung*

is apparent in its ability provide us with the means to live in the global village, to see a period and its problems here and now. Working in an occupation is one area of *Bildung* where those problems are settled for us all if only we have the ability and the freedom to perceive and read them in our everyday life. This in turn requires a fully matured *Bildung* and fully empowered citizenship – also at work.

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SHAPING THE WORK LIFE – A FUTURE ORIENTED WAY OF LIFELONG LEARNING

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Introduction

In many European countries, there has been a major shift in adult education from more "general" activities to the area of gainful employment. The reasons for this can be found in two developments. On the one hand, economic recession has led to growing unemployment which has enhanced the necessity of measures for retraining workers made redundant. In addition it is thought that human resources are of growing significance for fostering economic growth. On the other hand, the ideals of educated citizenship and personal self-fulfillment which had been very important for "general" adult education have lost much of their attraction, due to considerable changes in the "Zeitgeist".

Whilst growth in spare time had, more than two decades ago, strengthened the ideal of self-actualization outside the world of work, in pursuing social and artistic activities, neo-liberal thinking nowadays stresses the importance of achievement within the area of paid employment. Likewise, educated citizenship seems not to be as highly valued as before because market forces are often held to be the most effective means of promoting the well-being of the community, in contrast to public discourses informed by arguments founded in overarching reason.

Although it is indisputable that adult education has to accommodate changes in the world of work, perhaps more intensely than before (Langlo, 1993), nevertheless the aim of furthering self-fulfillment which is not con-

financed to working life and, even more important, educated citizenship should not be waived. Therefore, it would seem necessary to search for philosophies and methods of adult education which at least are able to combine occupational and "general" goals even if it may not be possible to reconcile the two. To this end, "shaping the work life" is suggested here as a guideline for adult education related to gainful employment. In the context of lifelong learning this must, of course, have considerable consequences for all areas of vocational education and training.

Growing Importance of Lifelong Learning

Lifelong learning is nowadays one of the most frequently referred to ideas within discussions about the future of modern societies which often are referred to as "post-industrial" societies. Even if one does not agree with predictions of the emergence of an "information society" it seems obvious that the role of knowledge is growing. This is said to be especially true for the expanding services sector although the predicted trend towards a "services society" may be likewise disputable, depending of course on the meaning of this catchphrase. Certainly "secondary" services which support the production and distribution of material goods, e.g. banking, insurance, management, consultancy, transport, wholesale and retail trade, advertising and so forth, are gaining more and more importance. This in turn leads to a greater percentage of work tasks which deal with immaterial symbols as compared to material objects, that is, which probably require more symbolic knowledge, although often not of a very complex kind. To describe this development in a distinct way the European Commission characterises the society of the future as one which is "knowledge based" (White Paper on Education and Training, 1995). The pace of change leads to growing importance of adult learning which is epitomized in the notion of lifelong learning.

If this argument is true for changes in the overall composition of economy it should apply to changes at an intermediate level too. The relative importance of different occupational areas is changing, as far as the size of the manpower employed is concerned, shifting from traditional industries to the above mentioned fields so that workers who have been made redundant have to be retrained. Within these sectors, too, there is a shift from more simple (often manual) jobs to ones which are more related to symbols and sometimes to more complex symbolic knowledge. But even on a micro-level, regarding the composition of existing work tasks, there is a major change. The main reason usually given is the implementation of new technology, be it on the shop floor or in office work. Of similar significance, however, are changes in work organisation aiming at enhancing

the effectiveness and flexibility of work processes, in view of shortening product life cycles and higher standards for quality assurance.

It must be noted, however, that especially in this case the new requirements do not mainly, as is often said, encompass more and more abstract, symbolic knowledge, e.g. of the technology employed. Complex knowledge about how to handle the work process as a whole with its unforeseeable features, especially in "crash situations", is necessary. Here the development of core skills and key qualifications, including problem solving, creativity and communication skills, comes to the fore. These should, however, be combined with knowledge of the content of the respective task, in this way forming complex "work process knowledge". This opens up new perspectives for adult learning as well as for the whole field of vocational education and training.

Perspectives for Adult Education

New forms of work organisation have led to new conceptions of adult education with regard to the working world (Dybowski, Haase, & Rauner, 1993). The former encompasses work teams with flattened hierarchies and closer links between producers and customers which affect also shop floor and office work not directly connected to customers.

The main feature of these new conceptions is a focus on learning directly at the work place, embedded in the day-to-day work process. This permanent learning preferably takes place in teams which may be the actual work teams or groups especially formed for solving problems in the ongoing work process. Here the tradition of "quality circles", originating in Japan, comes in. These can and should, as will be stressed later, be transformed to "shaping circles" that are established for permanent action towards improving work organisation and job tasks, not only for higher productivity but also for better working conditions, and including job enlargement and job enrichment, with a greater scope of responsibility and more stimulating tasks (Heidegger, & Rauner, 1991).

If these forms of permanent learning encompass, on a systemic level, the whole enterprise it is appropriate to call it a "learning organisation". According to the idea of the whole being more than the sum of its parts it is reasonable to employ the term "organisational learning", meaning the learning of the organisation as a whole, which contains the learning of the individuals but, at the same time, transcends it. Organisational learning is at present a major point of interest for research in human resources development as well as in continuing vocational education and training (Burns, & Flam, 1987). This idea is also being applied to connections between suppliers and customers forming so called "production chains". These also can

develop organisational learning of a higher order which should improve overall productivity and, in the end, lead to economic growth. If regional networks of such production chains, often mainly encompassing medium sized enterprises, are emerging it is appropriate to talk about them as constituting a "learning region". To support European regions in becoming "learning regions" is a main aim of the European Commission which expresses the hope of this process being a major means of countering unemployment and fostering social inclusion so that what is sometimes called the "social organisation of innovation" can result. It is obvious that continuing vocational education and training plays an important role in this process, possibly leading to the development of new forms and content for both adult learning and initial education and training. Perceived in such a way the term "learning society" which is often used in connection with the "knowledge based society" of the future might attain some real significance.

"Shaping" the Worklife – A Guideline for Lifelong Learning

Although at first sight these developments seem to indicate a spontaneous development towards more human centred working conditions there is missing a decisive aspect. Whilst learning constitutes in itself an important value for personal self-fulfilment nevertheless there has to be asked what this learning is aiming at. It is exactly this question which is usually not asked because the answer is taken for granted. The mainstream arguments presented in the literature emphasise technological and economic determinism. There is said to exist a continuous outflow of new technologies which change all kinds of industries, by that determining altered work tasks and creating new ones. In addition, the diagnosis of "globalization of economy" leads to the assertion that new forms of work organisation have to adapt to the demands of global competition. These are said to consist, for the highly industrialized countries, of customized small batch production and high quality standards which can be met only by decentralisation of responsibility, in team work with flattened hierarchies and high flexibility of the work force. So the conceptions of learning organisation and even of the learning society are taken as being merely instrumental for economic competition, between enterprises, nation states and between the triad of the USA, Japan and Europe.

Correct as all these arguments, at least in part, may be, what is wrong about them is the contention that there is only the one and best way of meeting the new economic requirements. There is ample historical evi-

dence (Noble, 1984, Bijker, Hughes, Pinch, 1987) that there are always alternative ways to employ technology and, moreover, different ways of using technologies in the production process. Therefore it is necessary to equip people with the knowledge required for taking part in public discourses about the direction which the use of technology should take (MacKenzie, & Wajcman, 1985). Here it is important to note that there may be different answers from the same person, depending on his or her perspective as for example a consumer or worker (Rauner, Rasmussen, & Corbett, 1988). Whilst this is important for adult education in general it has special consequences for continuing vocational education and training. As far as their work tasks are concerned workers should be empowered to co-determine the way technology is employed at their workplace (Brödner, 1990). That this is by no means an utopian aim is illustrated by the strong move in the computer industry towards "participatory software development" (Ehn, 1988). It has been shown that including the workers concerned in the development process leads to solutions which are more efficient from the point of view of the management too. Clearly the reason for this is that workers are more able and willing to utilise new technology if they have had the opportunity to influence its "shape". This is the technological aspect of the principle of "shaping one's own worklife". Learning in this way by itself not only renders people more self-reliant. Moreover, people realize that what they are learning enables them to really co-determine how they work. This in turn should give them the consciousness of becoming partly independent which should foster their willingness to participate in the public sphere.

A similar, even stronger, argument holds for the social area of work organisation. Obviously it is possible either to increase responsibility merely for the sake of higher productivity, by intensifying production pressure, or to foster it in the interest of the workers, too, enabling them to create working conditions which meet their own requirements. It seems possible to come to better compromises between management and workers here, also, because such improved working conditions in the end will also often increase productivity. This in fact constitutes the "philosophy" of the "learning organisation" if this idea is taken seriously.

Vocational Education and Training: Preparing for Shaping the Worklife

By employing the "shaping approach" in continuing vocational education and training major changes should result. In addition to programmes of further education on the one hand, and learning aimed at adaptation to altered work tasks on the other, teams aiming at improving work organisa-

tion, or "shaping circles", should be permanently established. This suggestion has proven not to be utopian, too. There is ample evidence (Kern, & Schumann, 1986) that there is a move towards such measures aiming at such organisational forms, sometimes called "learning islands", although their full scope has not been explored. Shaping circles may lead to a closer connection between continuing training and human resources development, in contrast to approaches based merely on the improvement of recruitment. Additionally, the "shaping principle" should be applied to initial vocational education and training.

Here it is necessary to change school based learning as well as learning at the work place. The former has, in compliance with what at present is much discussed under the headline of core competencies and key qualifications, to concentrate on problem solving, creativity and communication skills. But above that, it is important to present students with the possibility of alternative solutions in order to further their ability to design solutions which may meet different interests. Only in this way they will realize that there are in fact alternative solutions, and it is a matter of the strength of different interests which one either has been chosen in the past or will be chosen in the future. Work based learning should be given more emphasis because it is suited for fostering experiential learning (Brown, Collins, & Duguid, 1989). This is most important for gaining experience in complex real-life situations which require not only "know that" (Dreyfus, & Dreyfus, 1986), i.e. symbolic knowledge, but also "know how" to deal with problems in reality, including human communication at the work place. The importance of this has been increasingly stressed recently (Griffey, & Kelleher, 1996) with reference to "non-conscious learning" (Lewicki, Hill, & Czyzewska, 1992), or "tacit knowledge", which can be analysed by means of a "dialectics of acting and imagining" (Heidegger, 1987). When it comes to the question of how to prepare people for lifelong learning it has been shown not to be enough just to explain its importance to students. Nor does it seem to be sufficient to "lay the ground" for further learning, during initial vocational education and training, by teaching "learning skills" – whatever they may be. Recent research into Artificial Intelligence has begun to stress the significance of motivation for learning, that is for attaining intelligent behaviour (Pintrich 1989). Motivation however is based in the emotional domain of human life, so emphasizing the relevance of this realm even to, as it seems, purely cognitive tasks. This relation can be analysed by a "dialectics of work and love", connected to the relation of cognition and emotion (Heidegger, 1987). In this way, the horizon of occupational training at least partly encompassing learning for "general" development of one's personality is opening up.

Concluding Remarks

The trend towards learning being used only instrumentally for higher economic competitiveness represents an all too narrow view. The learning of adults, even if primarily aiming at improving the performance of work tasks, may be changed so as to support individual independence at the work place and by that fostering educated citizenship and holistic self-fulfillment. The "shaping approach" presented here has been employed in several model schemes in Germany but is, under different headings, also being discussed in international literature on vocational education and training as well as in human resource development, although mostly with less far reaching claims. The possibilities of strengthening this approach, also in initial training, seem of great promise.

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TOWARDS UNDERSTANDING THE DEVELOPMENT OF AN ENTREPRENEURIAL LEADERSHIP-IDENTITY AMONG FINNISH FEMALE ENTREPRENEURS

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Introduction

During the past decade unemployment in Europe has increased, especially in the public and service sectors. Recruitment emphasizes short term project-like employment opportunities rather than permanent jobs. This has led to job-insecurity especially among women professionals and generated interest in pursuing one's own business. The process has been supported by state-funded self-employment schemes for women and by "god-mother"-support programs from senior women entrepreneurs. However, the decision to pursue a business of one's own is never simple or easy. Entrepreneurship often means long working hours as well as financial risk-taking, and can also put a strain on one's health and personal relationships. It is also likely that, given the masculine image of an entrepreneur and the male domination in the business world in general, the decision to start a business brings up more anxiety in women than in men.

While women entrepreneurs are an established group of stakeholders in the economy they still remain a minority. *Statistics Finland* (1994) has carried out a quantitative analysis of women leaders. The study indicates that there is very sharp pyramiding of women's presence at different levels of management: only 2% of managing directors of large companies are women, while 62% of the white-collar workers are women. In the small businesses-sector, which is our particular interest, one fifth of the managers are women. The present study aims firstly at identifying the constraints

women face as entrepreneurs and secondly at mapping the training needs they have in developing the business idea and its implementation.

The constraints that women entrepreneurs face can be both external and internal. External constraints have to do with other people's attitudes towards women entrepreneurs as well as with structural forces, while internal constraints involve shortcomings in the skills needed to succeed in business on one hand and the need to cope with incompatibilities with gendered value systems on the other. The external and internal forces restricting women entrepreneurs are naturally equally important, especially in view of the fact that these factors interact in complex ways. For example, conservative views in the social environment that advocate working women's neglect of their children often make women feel guilty because such attitudes appeal to the moral imperative for caring that women have internalized through their socialization process. Thus, attitudes prevailing in the environment gain some of their strength through the influence they have on women's value system, which in turn may lead women to conformist decisions about their role in working life.

While both external and internal constraints are equally important when trying to understand the situation of women entrepreneurs, our present discussion will concentrate on internal constraints. The objective is not, however, to suggest that individual women are the core "problem". We believe that many of the internal constraints that hold both men and women back from making non-traditional vocational and professional choices are constructed in gender-related socialization processes and shaped by structural forces (the gender system). The purpose of socialization processes is to make us into individuals that are both able and willing to play the traditional gender roles. The other side of the coin obviously is, that such processes also tend to make us into individuals who do not have the skills necessary for or interest in making non-traditional choices. Among other things, the gender-related socialization processes complicate women's opportunities to create and to adapt to an adequate occupational identity in non-female fields. This is especially so in view of the fact that very few traditional (male) occupations as such are gender-neutral but rather emerged from a male-oriented worldview. Since the role of an entrepreneur is not traditionally associated with women, we need to understand how the female gender socialization process influences the development of women's value system and its impact on their entrepreneurial management and leadership styles and skills. Thus, this study aims at identifying the internal constraints women have to deal with as entrepreneurs and at exploring the role of training to alleviate these constraints. In line, the discussion concerning internal constraints focuses on two aspects: the gender-related value systems and the skills required in entrepreneurial positions. A qualitative method based on an open-ended, semi-structured questionnaire was used in the empirical study, where six woman-entrepreneurs

were interviewed representing different business sectors and age groups. The data collected in this preliminary study was used to identify meaningful questions for further research on understanding entrepreneurial leadership-identity among Finnish women entrepreneurs.

The Gender-Related Value System

Research has shown that there are some persistent differences in the value systems held by men and women (Chodorow, 1978; Prokop, 1981; Sørensen, 1982; Haavind, 1982; Gilligan, 1982; Waerness, 1983¹). Such differences can be seen as a consequence of the sexual division of labour, which leads to differences in men's and women's general living conditions and their social experience (Lasonen, 1991; 1997; Avotie, 1998). Thus, our gender related value systems emerge, among other things, from the need of both men and women to have their social experience confirmed. Since working outside home and being the breadwinner of the family has been an important part of the male gender role it is essential for the male socialization process to provide men with a value system that gives priority to those values, demands, and rules that operate in working life in general and especially in positions of power. Such socialisation produces individuals who greatly value their emotional autonomy and who wish to be appreciated for their skills rather than for their personal qualities. It also produces individuals who are emotionally comfortable with circumstances of the kind that characterize hierarchical structures, for example emotional distance to other people, relationships with power differences, and instrumental relationships (Chodorow, 1978; Eliasson & Carlsson, 1989; Fredelius, Frithiof & Ursing, 1994).

The value system that characterizes women can be related to the fact that women, as a collective, have carried the main responsibility at home – for example bringing up children, managing the social network of the family, and maintaining relationships deep enough to create a feeling of security and love at home. An essential part of the female socialisation process is thereby to provide women with a value system that gives priority and authorization to such skills and values (e.g. particular perceptions of morality and rationality) that characterizes this kind of work and the kind of social milieu where it is prominent. An aspect of this is, for example, internalizing values and developing traits and skills that give priority to continuity in relationships. Examples of such traits are feeling responsible for

¹ For the sake of simplicity we do generalize about the gender differences. Individual men and women do not, however, have to internalize the gender related value systems equally strongly. It is, for example, likely that professional women show a less "gender-typical" value system than do women in general.

other people's needs and feelings, valuing reciprocal and unchanging relationships with others and becoming dependent on intimacy and a sense of belonging.

Research has shown that the values and skills needed in working life, especially in the managerial positions, match the outcome of the male socialization process (Grant, 1988; Acker, 1994). On another level there is an interaction between the male socialization process and the social construction of professions like that of managers which over time has led to consolidation of the male worldview in leadership and management. It is hardly surprising that the hierarchical structures and positional proceedings featuring today's business environment have been found to be the greatest single constraint on women's success in a managerial career (Grant, 1988; Helgesen, 1990).

It is, however, possible, that male-oriented organizational culture is not as severe a problem for women entrepreneurs in their own business as it is for women managers working in large organizations. As founders of their companies women have more freedom to create an organizational culture and structure that is comfortable in terms of their personal way of dealing with the social environment (Schein, 1992). There is in fact a growing body of evidence that women's relational capacity can have very positive effects on organisational productivity. Research indicates, for instance, that women leaders have a tendency to create a social milieu that is less prestige-conscious, more generous and open than is characteristic of male leaders (Grant, 1988; Rosener, 1990; Helgesen, 1991). A milieu of this kind makes it possible to free energy for cooperation instead of binding it up in territorial thinking.

A value system that focuses on continuity in relationships can, however, also be problematic for women entrepreneurs in different ways. One of the problems relates to dealing with the emotional distance that often characterizes professional relationships. The social experience leading to incorporation of relational orientation can cause a fear for situations requiring or leading to emotional distance between oneself and other people (Margolies, 1988). There are similarities between the relational orientation found in the "female culture" and what is called for the "need for affiliation" in management literature. A strong need for affiliation has persistently been found to be correlated negatively with managerial effectiveness (McClelland & Boyatzis, 1982; Youkl, 1989). It can, among other things, lead to situations where managers avoid making necessary but unpopular decisions and where managers avoid using their authority fearing of creating distance in their relationships. It can also lead to a situation where the manager establishes too close relationships with her employees, which in turn will undo her authority and professional discrepancy. The relational orientation has thus a potential to cause diffusion between the personal and professional relationships. This diffusion can severely harm the pro-

ductivity of the company by leaving the subordinates feeling "week, irresponsible, and without a sense of what might happen next, of where they stand in relation to their manager, or even what they ought to be doing" (Yukl, 1989:187p). It might also become a serious source of stress for the manager herself unless she learns to handle the distance which is a natural part of the professional relationships.

Even when the relational orientation of an individual woman is not very strong the cultural imperatives of the feminine value system can cause problems for a woman entrepreneur. The particular moral code that characterizes the feminine culture leads to an image of a "good" person who is preoccupied with how one's own behavior might affect other people. This can cause a feeling of ambiguity as the female entrepreneur develops a more "professional" attitude (goal oriented, firm and "hard") when relating to other people. As this professional attitude opposes the idea of a "good" person in the female value system (soft, open and caring) it is probable that the process whereby a professional identity is created is more complex and causes more ambiguity for women entrepreneurs than is the case for men.

A value system that focuses on continuity in relationships can be problematic for women entrepreneurs in yet another way. As mentioned above the particular moral code that characterizes the feminine value system leads to a preoccupation with the consequences that their own behavior might have on other people. For women entrepreneurs the most important "other people" are their subordinates on one hand and their children on the other. Children influence especially strongly women's decisions on their involvement in the working life. Since entrepreneurship and many other career choices mean long working hours children often create a significant moderating force in women's career choices (Bass, 1990). Children can, however, also be a "push" factor for women to become entrepreneurs, as "being on one's own" gives some freedom to arrange child care, etc. in a more flexible way (Sundin & Holmqvist, 1989).

The discussion above indicates that the feminine cultural value system can complicate the process whereby women entrepreneurs develop an adequate professional identity. However, this complication need not to be equally prominent for all women entrepreneurs as the strength of the gendered cultural orientations can vary between individuals. Similarly, the impact of the gendered cultural system on one's behavior can vary from situation to situation. It is obvious that the gender related value systems do not exist in isolation. On the contrary, they do influence one another. This means that the gendered cultural socialization can never be complete and that the value system of individual men and women vary (Czarniawska-Joerges, 1994). Research has shown, for instance, that it is characteristic for women entrepreneurs to come from an entrepreneurial family background (Sundin & Holmqvist, 1989). It is possible that this background

has influenced the socialisation process of these women and has made their value system less feminine, for instance by legitimating professional self expression and a need for economic independence. This can facilitate the development of an entrepreneurial leadership-identity.

Skills Required

For an entrepreneur it is very important to have the necessary task related skills (Miner, 1977). But it is equally important to be able to handle organizational conditions and other requirements entailed by a business. The present discussion concentrates on two extensive areas of competence that are important for an entrepreneur: task-related competence and managerial competence. Task-related skills include basic technical knowledge of production processes as well as general contextual knowledge. As the role of an entrepreneur is to seek opportunities and problems both inside and outside the organization and to take appropriate action, it is crucial for her to have, besides the relevant technical skills, knowledge of the way of doing business in the economic sector in question. The task-related competence is important for all managers but it is found to be especially important for entrepreneurs (Miner, 1977).

An entrepreneur is not just an expert in her field but also a leader/manager of a business. What skills are actually included in the managerial competence varies, but traditional management research usually discusses the concept in terms of skills involved in planning, solving problems/making decisions, organising and controlling. In contemporary research these skills are often referred to as traditional leadership qualities. In addition, since a manager can be defined as an individual who achieves goals through other people (Robbins, 1996), contemporary management research focuses strongly also on human interaction. Skills like "routine communication"², "networking"³ and "human resource management"⁴ are considered to be seen as important as traditional management skills (Luthans et al., 1988; Hunt, 1991).

When we come to the question of whether women have or lack some of the skills mentioned above it has to be remembered that women entrepreneurs differ a great deal in terms of their family background, education,

² Routine communication refers to functions like exchanging information and handling paperwork.

³ Networking refers to functions like interacting with outsiders and socializing and politicking.

⁴ Human resource management refers to functions like motivating and reinforcing, disciplining and punishing, managing conflict, staffing, and training and development.

professional experience and the sector of economy their business is in (Sundin & Holmqvist, 1989). It can therefore be difficult to make simple generalizations about their task-related or managerial skills. In terms of the division of labour between sexes, however, women's knowledge often lies in the traditional female fields. In the Scandinavian labour market women are mostly found in occupations that involve taking care of people or providing services for other people (as hairdressers, secretaries, nurses, day care personnel, cleaners, etc.). Many of these typically female occupations strengthen an identity that does not include entrepreneurial or managerial aspects. The situation is obviously different for highly trained professional women who often have entrepreneurial skills and managerial experience. However, when it comes to managerial skills statistics indicate that women are not promoted to managerial positions as frequently as men, which leaves women in general with less managerial experience than men have. In fact it is not rare that the inability to develop one's managerial and professional potential often leads women to a decision to start their own business.

One important dimension of the leadership function that should be mentioned here in particular is networking and politicking. Political work is based on the recognition of the fact that there are different interest groups and coalitions that affect the organization. Political competence includes then the ability to create and use informal contacts and networks, the ability convince other people, and the ability to read the political landscape (for example who is a member of a certain interest group, who has influence on what, and what are the central values of the errant interest groups) (Drake & Solberg, 1996). Because of the typical female perception of relationships, and because of their unfamiliarity with the rules of the game women often feel uncomfortable with political manoeuvres. It is, however, often crucial for the business that its manager does not evade from politicking even though a woman's access to the relevant circles can be constrained by the male domination of the social environment.

While politicking is important there is also another aspect of networking that is equally important. Contemporary research and counselling to small businesses stresses the importance of well functioning occupational and social networks (Sundin & Holmqvist, 1989). It is important to have an arena where occupational matters are discussed, where small business managers can get informed of important matters and where they can discuss and share their experiences. Networks can thereby both improve necessary skills, strengthen entrepreneurial identity and offer emotional support.

To conclude, the gendered cultural value system that women come in contact with during their socialization processes can have both positive and negative effects on women's entrepreneurial careers. The relational orientation can lead to a productive organizational environment through a

cooperative and generous leadership style, but it can also cause some ambivalence in dealing with professional relationships and the positionally orientated social milieu of business. The cultural orientation of individuals can, however differ, and it is not self-evident that a value system of this kind is typical for women entrepreneurs. When it comes to skills needed in entrepreneurship the point has been made that women entrepreneurs differ from each other a great deal, which makes it difficult to discuss their competencies in general. However, because entrepreneurs often are experts in other fields than management, it is suggested that the skill-related constraints probably appear in this area. Thus, both value system related and skill related aspects influence the complexity of the process whereby an entrepreneurial leadership identity is developed.

The purpose of the empirical study was to investigate in an open-minded fashion how women entrepreneurs experience their situation. Since this study is a preliminary one, it was important to gain relatively broad knowledge on women entrepreneurs in order to generate interesting and relevant questions for further research. Thus, even though the aspects discussed above guided the interviews to a relatively great extent, during the interviews other questions were also pursued.

Methodology

The six women managers interviewed were selected from the list provided by the Association of Business Women in Finland. Our criteria for selecting the interviewees required at least five years of managerial experience and a business with personnel totaling at least five people. The business sectors of the respondents varied: clothing design, accounting, consulting, construction, management of bakeries and cafes and running a restaurant business. One of the women interviewed was 30 years of age and the remaining five over 50. All had at least 15 employees. The interview was carried out as an audiotaped discussion on the phone. The interview was semi-structured having a set of open-ended questions. The interview took on average 30-40 minutes. The responses were scored and opinions, reflections and language use were analyzed.

The interview was divided into two sections: description of the process on entering a business and being a manager and deeper reflections on one's experience as a manager. More specifically the interview included the following questions:

How did you start your own business?
What was the motivation?
What risks have you encountered?
How did you cope?

What training needs have you identified?

What kind of values drive your business activities?

Do you see differences between men's and women's leadership styles?

Results and Discussion

The interviews revealed both gender-neutral features related to entrepreneurial activity as well as constraints and motivations related specifically to women managers. The respondents identified as the main reasons for starting one's own business being both personal traits as well as the surrounding environment. In agreement with previous research results (see e.g. Sundin and Holmqvist, 1989) most of the respondents in our survey also came from entrepreneurial backgrounds and perceived themselves as independent having strong sense of responsibility and being 'risktakers' and 'fast-movers'. To quote one respondent:

"My husband eliminates risks, I live from them". In our view the desire for independence and the role of one's background is a gender-neutral feature among those pursuing one's own business. Another aspect of entrepreneurship that can be considered gender-neutral is stress resulting from financial risk-taking. In our study most respondents has experienced stress because of financial concerns especially in the beginning of their careers.

An interesting cross-cutting issue, which featured throughout the majority of the interviews related to social constraints, which could be grouped into four: lack of time for friends and resulting loneliness; compatibility of one's self-image with the requirements of the business environment, conflicts and contradictions in the employees' perception of you as a leader and as a woman; and perceived hostility in Finnish social environment against women managers.

Lack of time for friends was initially largely due to a heavy workload, one needed to get the business up and running. Gradually many of these women managers grew out of the old friendships partly because there was less and less to share in one's life experience. Interestingly, the need for support was quickly conceptualized by the women managers and they actively pursued other social contacts and networks, either work-related or sharing friendships with other 'risk-takers'. One of the interviewees expressed this as follows: *"I am an odd one out, my former friends of the same age envy me, but now I have become friends with older women running their own business and we have more in common".*

Social support and personal networks were also clearly the most important means for releasing pressure. Active professional networking was a common feature among all respondents while the latter was more associated with women managers running their business on their own without their spouse's involvement.

The second concern that emerged in the interviews related to one's changing self-image in the business environment, which was expressed as follows: *"Business world is hard, am I getting harder?, Am I too soft for this business?"*. In our interpretation these questions are expressions of the relational orientation of these women being confronted with the hard more male-oriented business world on one hand and on the other express their internal inquiry on one's right to behave as a 'tough business-woman'. Not surprisingly these conflicts were experienced vividly relating to the beginning of the career while the years in business made the women more confident in their unique leadership identities as expressed by the more senior women interviewed: *"I often wonder whether I am becoming too cold, in business one cannot trust anyone. It used to be more difficult to accept this but over the years I have found my way. I am not an authoritarian boss, I manage with humour but people only mess with me once and my employees have learnt to respect that"*.

The above was not experienced as strongly by the women operating in the businesses with their spouses.

The third aspect of the social constraints dealt with personnel management related to the difficulty of employees and other partners to accept the woman manager as an authority. One example is a young woman running a clothing and design business having repeatedly problems with sub-contractors not producing the quality that was agreed or missing deadlines, etc. In her own view this was due to her lack of authority among the people she contracted. To us the situation reflects the result of the traditional socialization process of the employees not allowing authority to a woman. There are obvious difficulties for the employees to relate to a woman in a non-traditional position. Again, this constraint was not expressed by the respondents running the business with their husbands as they had adopted a role as a 'mother' relating to the employees in a more affectionate way.

A young entrepreneur woman described her experiences relating to authority like this: *"A business manager cannot be young and beautiful, you are not taken seriously. I intentionally started to use glasses, have a conventional hairdo and wear conservative clothes to have more credibility in the eyes of my clients"*. Another respondent running the business with her husband reflected: *"I am the soul of this business. Employees approach me with their personal problems, which they would never do with my husband. We are like a family here"*.

These women had delegated the more male roles of decision-making and authority to the men, adopted a traditional female-oriented role thus enabling the employees to relate to them in a familiar way.

Lastly, several respondents indicated that they operate in a woman manager hostile environment in Finland. Direct expressions included: *"There are too many race-killers", "there is no right to be a young woman in this business", "she is just a dumb blonde"*. It seems that female innovativeness

and management capacity is not fully recognized or it is seen through the traditional role categories. While our emphasis was on internal factors, the hostility experienced by these women is an interesting and clearly pronounced feature in Finnish business environment warranting further research.

In conclusion our results clearly showed that the development of an entrepreneurial leadership identity is complicated for women entrepreneurs for the fact that there are contradictions between the female socialization process and the traditional perceptions of women's roles viz. a viz. the more male-oriented business culture. Awareness building in this aspect would probably be helpful for the women managers to see and cope with the contradictions. This notion was supported by most of the respondents who felt that the interview itself was a unique opportunity to reflect on their life-experience as managers from a new perspective.

Training Needs

Most of the respondents identified the need for managerial training, thus supporting our hypothesis. More specifically the training needs mentioned included need for personnel management and leadership training, need of financial management and legal advice and computer skills. As a response to the training needs, these women had sought continuing education opportunities and saw it as an important coping strategy.

As indicated earlier, grounded in our major findings discussed above we argue that it would be beneficial for women managers to learn to conceptualize the impact of the female socialization process and its effect on one's behavior in view of the expectations of others' in the male oriented business world. It would also be important to make women aware of the possible discrepancy between the company culture and associated leadership style versus their self perception and inner structure. This would make their reality more visible from another angle and assist them in finding a balanced and operational professional identity.

Conclusions

The preliminary study showed that there is potential in our theoretical framework to be an operational tool in understanding the development of an entrepreneurial professional identity among women managers. It has value in making gender-dimension visible in the social climate of business and in describing a particular leadership style, as well as in studying the process of change and the impact of one's life-experience on one's leadership style. Our approach was also found helpful in identifying training

needs and taking steps towards developing a training curriculum for women managers based on the discourse of gendered socialization processes.

Future Interests

In the process of the present study several new interests emerged, which can be phrased into the following questions:

- How does the process of change in one's leadership style evolve in relation to years to experience and personal growth?
- Which contextual variables and their combinations are critical?
- What is the difference between leadership style and self-perception between independent woman-leaders and women managers operating together with their husbands?
- How is the intergenerational continuum affecting the leadership and management culture?
- How do the management structures establish and evolve in a women's business?
- What are the lessons learnt for today's management world from women managers' experiences?

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ENTERPRISES AS ENVIRONMENTS FOR WORKPLACE LEARNING AND TRAINING

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Introduction

In Finland all forms of education have been school-based, an approach whose effectiveness began to be questioned in the 1990s. Historically, the respective volumes of school-based vocational education and apprenticeship training have varied under the influence of such factors as access to education, the economic situation, educational values, and the requirements of work. Before the World Wars people mainly learned an occupation either in formal apprenticeship training or through informal work-based learning. The years following the Second World War saw the creation of a fine-meshed net of regional vocational education establishments to support economic growth. This was the beginning of the rise of school-based vocational education and training in Finland.

The developmental stages of vocational education cannot be separated from the development of the educational system as a whole. After the wars the whole educational system was a central concern for building the welfare state. Promoting equality has been one of the most important goals, and vocational education has been integrated into the rest of the educational structure.

The growth in the volume of vocational education has been linked with the overall provision and quality of education and with all citizen's access to education. So far there has been a willingness to invest in the equipment of Finnish vocational education establishments and in the quality of the

teaching offered by them. In Finland the equipment of vocational schools and colleges is up to date, vocational teacher education is of a relatively high standard, the work of vocational teachers is respected, and vocational students receive, in international comparison, many-sided work instruction.

As compared to school-based vocational education, apprenticeship training has not in Finland been very popular among young people; only a few per cent of the age cohort take up this type of vocational training. Even if it has become more popular in the 1990s, the percentage in the age cohort of those who have completed apprenticeship training has not yet reached the figure ten. Breaking the ten-per-cent limit by the year 2000 is a quantitative goal of Finnish educational policy (Lankinen, 1999; Ministry of Education, 1999).

An aspect of the current trend in educational and employment policy is the fashionable argument that traditional full-time and school-based vocational education is able neither to ensure the best possible preparation for the workforce and employment nor to meet the demands of industry, commerce and services. In Finland, the youth unemployment rate (37% in 1994 and 28% in 1998) has been about twice as high as that of adults (21% in 1994 and 10% in 1998). When problems arise with employment and labour policy or when the economy is faring badly, it is often the educational system that comes in for criticism. However, the problems cannot be removed if the school system changes but the production system grinds on, stuck with earlier usages.

Today's reforms of vocational education are an attempt to respond also to the challenges that rapidly changing technology creates within occupational environments, and to the requirements of lifelong learning. The recent focus of Finnish educational policy is an endeavour to train young people for more learning-intensive work, meaning among other things that they must be provided with core competencies, and to promote a smooth transition from school to work. Workplace learning and training projects organised as bridges between school and work are also designed to situate learning in the workplace so as to enable students to make contextual, meaningful and relevant use of their knowledge.

The framework for New Emphasis on Work-Based Learning current experiments and pilots activities was outlined in the Finnish Government's Development Plan for Education and University Research for the Period 1995-2000. This long-term plan specified the details of a reform of the qualifications offered in vocational upper secondary education. By 2001, training for all occupational fields will be extended to last three years, including workplace learning periods of at least six months. However, what is known as work practice, provided in workplaces or school enterprises, is not a new endeavour in Finnish vocational education.

The Finnish reform of (general and vocational) secondary and adult education legislation was launched in January 1999. The earlier fragmented collection of laws, based on types of institution, was replaced by more concise and integrated regulations. The Vocational Education Act of 1998 specified that workplace learning periods in companies were to be included in all study fields, covering all sectors of the Finnish economy (Laki ammatillisesta koulutuksesta [Vocational Education Act]; Luhtanen, 1999). Implementing work-based learning in companies will create a need for more than 40,000 trainee places every year (National Board of Education, 1999).

The wording of the act emphasises the learning component of workplace experience. The trainees are called workplace learners, and workplace practice is called work-based learning. This undertaking also affects the way in which curricula are reformed to promote work-based learning. The guidance involved in, foci defined for, and assessment of work-based learning are based on educational objectives set down in a curriculum planned and designed mainly by the teachers but in collaboration with the employers.

The social partners have taken active part in planning and implementing workplace learning periods -in -initial vocational education. Behind the employers' willingness to help to make young people's transition from education to working life easier lie their worries about the aging of the population and about recruiting new qualified people. The Government and the pivotal labour market organisations have issued a recommendation in favour of work-based learning.

Educational reforms may start either from above, as reforms initiated from within the system, or from below, as initiatives of practical implementers or, as is probably most often the case, as a combination of both approaches. Typical of Finnish school reforms has been moving to revised systems via pilot and experimental projects. In 1998 the Finnish Ministry of Education and the National Board of Education launched pilot projects, to some extent funded also by the European Social Fund (ESF), under the title *Bridge From Vocational Education to Work* (the Finnish 2+1 Model). As a result, 16 regional pilot projects were carried out in 1998-1999 with a view to developing school-workplace cooperation as an aspect of promoting workplace learning and training within the framework of the Bridge project. The Bridge project has the following aims:

1. Finding alternative forms of implementing, in different fields of study and training and in municipalities of different sizes and having differing occupational structures, education combining the best aspects of school-based education and workplace-based learning, which is also believed to bring school-centred education and education based on apprenticeship contracts closer together;

2. Identifying alternative means of innovative interaction and networking between vocational education establishments and working life;
3. Looking for ways in which educational establishments and working life can, in collaboration, improve the fit between vocational education and working life and promote transition from education to working life;
4. Generating viable methods of developing the goals of work-based learning, supervision of learning, collaborative learning, and assessment;
5. Testing viable contractual usages and working forms of financing and of division of labour between workplaces, students and educational establishments;
6. Conceiving joint projects where educational establishments and working life plan education and training together and develop the practices of working life;
7. Testing new models of implementing training for teachers and workplace trainers with a view to ensuring a high standard of work-based learning and a high quality of education;
8. Generating methods of promoting young people's employment and entry into working life so as to prevent marginalisation and waste of the resources invested in education;
9. Enhancing the status of and esteem accorded to vocational education and training.

The Finnish 2+1 model involves a reform of the structures, contents and curricula of vocational qualifications. At the moment one third of the qualifications take two years to complete; they will be extended to three years by 2001. All vocational qualifications will include, uniformly, a minimum of six months' workplace learning period. Work practice is already a part of vocational education provision, but its amount and implementation have varied from one study field to another. The reform will be the second remodelling in the 1990s in Finland of the curricular frameworks and guidelines of all study fields.

The national follow-up study of the Bridge project started in February 1999. The purpose of the study was to examine what workplaces are like as learning environments and to find out what enterprises and educational establishments are learning from each other.

Pedagogical Starting Points of Work-Based Learning

The Bridge experiment is an attempt to make student's transition from education to working life smoother and to combine school-based and workplace-based teaching. Workplaces and educational establishments differ from each other as learning environments, representing different social hierarchies, norms and action cultures. These two learning environments are not mutually exclusive; instead, they complement and enrich one another. Implementing on-the job learning has not only meant the introduction of an element of work-based learning into secondary education but has also placed organisations, enterprises/workplaces and educational establishments before new kinds of challenge as regards making use of the opportunities for learning arising from collaboration. Apart from the students, such learning collaboration involves teachers, principals, employers, and employees at the workplaces.

Some employees will be trained as workplace trainers, who will be given new duties and roles that will enrich their daily work. Supervising and guiding students will not be their responsibility alone; other employees and the employers will also make their contribution. In single-person enterprises one and the same person will be responsible for all these duties and roles.

Making use of authentic learning environments and the real-life problems and social contexts that they involve will improve the quality of learning. Combined with school-based teaching, workplace learning periods will give students opportunities to construct a picture of the reality of their intended occupational field as a whole as something that changes with time and from place to place and from situation to situation.

Learning environments are shaped by the underlying ideas of the people and groups who design and implement them. Another factor affecting the nature and quality of learning are the learner's motivation and aptitudes. The starting points for designing learning environments may be organisational or derived from psychology of learning or employment policy, or some combination of these.

Constructing learning environments in vocational education can be crystallised in the following principles. Learning environments should:

1. Enable students to consciously apply their previous knowledge and skills and make new discoveries in real-life situations;
2. Enable students to work and practise job-related tasks with experienced employees;
3. Offer students challenging assignments;

4. Transmit knowledge as something conditional rather than as the only alternative;
5. Encourage students to consciously construct personal theories of learning;
6. Encourage students to engage in internally rewarding and self-directed learning;
7. Help learners to become aware of their own thinking and learning strategies;
8. Ensure students' access to collaborative teams of a kind where they can gain experiences of modelling and feedback and that encourage them to self-reflection;
9. Train supervisors of learning who themselves offer students examples of confronting and defining problems and of applying one's knowledge to solving them.

The traditional word "work practice" has been considered inappropriate when revising curricula to achieve a better fit with working life and replaced with the concept "work-based learning". This reflects a wish to distinguish between *acquiring experience* and *gaining experience*. Acquiring experience is about skills and knowledge useful in performing a job. The things experienced are remembered as mental images. Gaining experience, by contrast, has a subjective dimension because interaction with experiences outside one's educational experiences are shaped into personal ways of life and action. According to Fischer (1998), the distinction between acquiring and gaining experience lies in personal impact. When experience is gained rather than acquired, the emphasis lies on one's personal experience from and one's interpretations of one's experiences at the workplace and on applying and making use of the knowledge and skills gained through them and on incorporating one's experiences into the knowledge that one acquires later on.

Supervising Work-Based Learning

Because the crucial factor determining the efficacy of work-based learning is the support and supervision that the workplace learner receives at the workplace, standardising and extending work-based learning will mean the introduction in Finland of new practices of systematically implementing work-based learning and its supervision. Workplace trainers began to be trained in Finland in 1996 in a four-year project financed by the Ministry of Education, the European Social Fund and enterprises (National Board of Education, 1999a). The project designed a voluntary training course of two study units (some two weeks).

The Finnish experiment involves the introduction of a new system, the systematic workplace supervision of students. As teachers, the supervisor of a workplace learner must perform certain tasks in order to ensure successful work-based learning. These include channelling the learner's interest into the essential aspects of that which is being learned, providing verbal guidance, helping the learner to reflect on their experiences, and providing encouragement and motivation. The workplace learner must also be supported in tackling problems. Supporting learning is important also to the trainers themselves because by supporting the learner's learning they are themselves supported both in their pedagogic skills and in their technical competencies. All these aspects provide a challenge to bring into concept the pedagogical support for workplace learning.

Eraut, Alderton, Cole and Senker (1998) shows in his own study that one way of learning from others at workplaces is organised support for learning. Organised support of learning covers all the learning situations where learning is supported through special arrangements.

The terminology of supervision of work-based learning supervision includes a number of concepts used to describe support for learning. In the context of (1) initial vocational education there are visits, shadowing, apprenticeship, orientation, mentoring; in the context of (2) qualifying for and developing in an occupation, coaching; and in that of (3) stabilising one's career and gaining merit, job rotation, shadowing, reference to experts. Studies of supervision and guidance in working life do not have a concept that would cover supervision and guidance as a general phenomenon. They may be discussed in different terms depending on the approach and aim of the given study. If supervision is considered from the perspective of career, it may be described in terms of professional development: apprentice, colleague, mentor, sponsor, senior manager. If supervision is being considered from the perspective of the mentoring system, the terms used to describe it may include peer, guide, sponsor, mentor. As a mentor, a supervisor or trainer assumes the roles both of a teacher and a champion.

According to Eraut et al. (1998), there are five methods for promoting learning, occurring either separately or together. The aim of the process of induction and integration is the comprehensive integration of the employee as a member of the organisation. The focus is on socialisation: the employee learns to understand the aims and objectives of the organisation, the other employees' roles in it, and his or her own role and position. The employee understands what is expected of him or her and adapts to the network of human relationships making up the work community. In this context management may range from "laissez-faire" and "minimum monitoring" to a series of formal events comprising, for example, an orientation period followed by short courses. Considered as a phenomenon involving exposure and osmosis learning takes place as an aspect of participation. The learner observes and listens, acquiring knowledge and skills

through the phenomenon of osmosis. The role of the management is limited to enabling the learner's exposure to learning by ensuring varied environments and learning contents; otherwise it plays a passive role. Learners must be alert and receptive and process what they are expected to know. As a rule, the methods used in this approach include shadowing, study visits, and job rotation. Self-directed learning requires learners to assume a more active role; they learn by doing their job and discover that which they must learn, intuitively, in what they are doing. Such self-direction is possible if learners are given appropriate jobs and encouraged in their learning. Employees' self-directed learning presupposes the positive support of the management. Quality management requires of an organisation comprehensive goal-setting and monitoring of results. The nature of this phenomenon may vary from a "donkey-and-carrot" style to development-oriented support for learning intended to improve individual performance. Structured personal support for learning presupposes supervision and guidance. Sometimes supervision is an official process, sometimes the management or an experienced employee simply assumes the role of a supervisor; sometimes the management asks an experienced employee to become the workplace trainer of a junior employee. The management can also ask the junior employee to find themselves a suitable trainer.

The role models of a workplace trainer may be defined on the basis of the supervisory relationship. Supervision is about supporting the individual's successful performance of the developmental task facing them at each given stage. Personal development in an occupation through supervision involves an older and more experienced employee helping a younger employee to find themselves a personally suitable and satisfying, socially significant career and learning job tasks. A trainer and supervisor is an agent helping a junior employee to cross boundaries of knowledge and skill, move from one stage of development to another. This is not a function of chronological age because the trainer's position in the organisation is also an important factor. The Finnish case study foregrounded a workplace trainer's role as an adviser, listener, model and source of emotional support.

Improving Status of Vocational Education Through Quality

An information society offers many opportunities for lifelong learning, for example as a combination of practical work and network-based studies that support the learner's practical work. The future status of vocational education will, naturally, to a significant degree depend on how well formal education is able to meet the challenges of the future and remain an important part of the learning society.

In the future learning will be seen as a continuous lifelong process where vocational education is the other aspect of general/academic education and vice versa. In practice this may mean a return to the beginning of history, to a situation where esteem for occupational competence stems from esteem for the personal qualities of the competent worker, while esteem or lack of esteem for education as such will be of secondary importance.

On the individual level the status of vocational education is based on the other hand on employment prospects and salaries, on the one hand on the competence and occupational skill that make finding employment and earning a salary possible in the first place. On the level of enterprises vocational education is valued of it produces competent employees that can be put to work without long orientation periods, considered expensive. Society, again, values vocational education, as it values other types of education, for its contribution to a positive national image and international competitiveness for example.

Considering the status of vocational education in terms of the fashionable concept of human capital opens some interesting perspectives (Parikka, 1999). If returns on education are assessed as if they were interest on invested capital, extending all vocational secondary education to three years will raise its status, in quantitative terms, to the same level as that of general upper secondary school education, nor do statistics reveal any very great differences in average salaries. On the other hand, the credibility of calculations of educational returns based simply on the number of study years is weakened by the fact that longer study times and multiple training are increasingly considered, from the viewpoint of society, a waste of resources. It would, of course, be possible to define some optimal total number of study years paid for by society. Calculations based on the period of repayment would seem to suggest that the status of vocational education is high. For example, traditional vocational education following comprehensive school repays itself quickly provided that the young person finds a job; to be sure, according to statistics their actually finding a job cannot be taken for granted. In practice, on the labour market the status of a 18-19-year-old with vocational qualifications is often no higher than that of their peers in general. However, longer workplace learning periods of a new kind may improve the situation in the sense that after completing their studies young people may find their first real job in the enterprise where they spent their workplace learning period, thus starting their career. Other indicators of human capital, such as those measuring versatile literacy, problem-solving skills, teamwork skills, communication skills, and other skills required in working life, are associated with individual characteristics and with the status of working-life skills rather than with that of vocational education, even if they do enter into assessments of the ability of the educational system to produce such features and thus achieve a good fit between education and working life.

Procedures

The national follow-up study of the Bridge project started in February 1999. The aim is to find out who have taken part in carrying out the project, how they have realised its aims, and how successful they estimate the implementation process to have been. The first year of the follow-up will involve mapping

- what kind of learning environments workplaces offer to a student in secondary education, as assessed by the representatives of the educational establishments and enterprises implementing the Bridge project; and
- what local and student characteristics are associated with the implementation of work-based learning.

The first year's implementing materials were collected with questionnaires in March-April 1999. The workplace learners ($n=477$) serving as the target group are students who, taking part in the Bridge project, completed their workplace learning period during the school year 1998-1999, and their teachers ($n=110$) and the employers ($n=236$) and trainers (or mentors, $n=217$) in the enterprises or in the workplaces owned by a federation of municipalities where they were placed. The respondents came from different sectors of vocational education: natural resources, technology and transfer, administration and commerce, hotel, catering and home economics, health and social services, culture, and leisure and sports-related activities. The respondents' distribution across the different target groups is shown in Table 1.

The figures presented in Table 1 indicate the number of questionnaires sent and returned. Among the students, the most faithful respondents among the four target groups to the Bridge project questionnaire, the percentage of returned questionnaires was 72.4 (giving a loss of only 27.6%).

The questionnaires completed by the students and the employers contained mainly structured tasks with predefined alternative answers. The surveys among the workplace trainers and the teachers were based on open-ended questions. The reliability of the structured questionnaires was examined with Cronbach's alpha. The Cronbach alphas calculated for the question batteries answered by the students, used to find out how they assessed the success of their workplace learning period and its effects on their learning and life situation, ranged between .78-.93, those calculated for the questions in the employer's questionnaire between .66-.88.

Table 1. Respondents to the Bridge Project Questionnaire in April 1999

Target group	Questionnaires Sent	Questionnaires Returned	Percentage of returned questionnaires
Students	659	477	72.4
Teachers	209	110	52.5
Workplace trainers	600	217	36.2
Employers/managers	511	236	46.2
Total	1979	1040	52.6

Target Groups

The questions making up the questionnaires have been formulated with a view to paying attention to contents described and analysed in theories of the learning organisation and in literature conceptualising work-based learning on the one hand and in the aims defined for the Bridge project on the other. The materials have been described chiefly as frequencies, percentages, averages and in the form of correlation coefficients. The following sections discuss the characteristics of the target groups that took part in the study.

Employers/workplace managers. A little more than half (51.5%) the employers participating in the Bridge project were women. Most employers were middle-aged; 7 out of 10 were between 36 and 56 years of age. Most had children of their own so that they were not unfamiliar with the task of bringing up the next generation. As regards basic education, 2 out of 10 employers received theirs in elementary school, a little over a third in general upper secondary school. Most had tertiary-level qualifications.

Technology and transport was the largest study field represented among the respondents, with commerce and administration as the next largest field. Nearly 9 out of 10 employers have more than ten years' work experience. The majority of the companies involved are service enterprises; 2 out of 10 are industrial firms while the same proportion are public-sector enterprises. Nearly a third of the enterprises had been operating for more than ten years. Of the employers who answered the questionnaire, 7 out of 10 told that they were owner-entrepreneurs or had senior executive duties, while 1 out of 10 belonged to middle management. The rest considered themselves performing the duties of an expert.

Workplace learners. The workplace learners attended 43 educational establishments and were studying for 23 different qualifications. Of the students who returned the questionnaire 206 were girls (48%) and 220 boys (51.6%). Most were aged between 17 and 19 (34.3%) or 20 and 21 (33.1%) while 24.2 per cent were between 22 and 25 years of age and 8.2 per cent over 26. Some 1 out of 10 students were over 25. More than half the workplace learners (56.8%) already have a vocational certificate. A little more than half (52.3%) intended to look for a job in their home district and a third somewhere else than where they were studying or had their home.

On the basis of their last certificate, 69.5 per cent of the students claimed that their study performance was in the average range. They also have faith in their study success: 95.1 per cent thought that they are doing well or do well if they make an effort. Only 1.9 per cent answered that they were doing badly.

The workplace learners were also asked about the strengths of their studies. Teamwork assignments were considered strengths by 42 per cent of the students, followed, in order of preference, by independent assignments (35.9%) and some specific individual module or subject (29.8%).

A good third of the students had by the point of answering the questionnaire accumulated half a year's work experience at most, while 15 per cent had work experience ranging between half a year and a year and 13.4 per cent had worked for 1-3 years. Their motives for continuing their studies towards a completed vocational qualification was supposed to improve their prospects of finding a job, the field is interesting, and gaining qualifications for further studies. More than half the students (53.1%) had already been out of work, a good third (38%) of them for a little less than a year or for a year. Most of the students (58.5%) intended to look for a job after completing their present studies while 11.7 per cent planned to study at an AMK institution (professional colleges) and 10.3 per cent to combine work and studying.

Workplace trainers and teachers. Teachers and workplace trainers have a central role in the supervision of work-based learning. The teacher provides supervision, support and empathy at school, the trainer at the workplace. Both may serve the young student as important adult role models.

Of the 209 workplace trainers who answered the questionnaire 55 per cent were women, of the 106 teachers 57.5 per cent. Thus both groups are slightly female-dominated. The youngest (those under 35) and the oldest (those over 56) age cohort included proportionately more trainers than teachers. The teachers in their turn had a small majority in the older middle-aged group (those aged 46-55). The average age of the trainers was 42.3 years and that of the teachers 43.8 years. Four out of five trainers have children, in most cases two children.

Table 2 illustrates the workplace trainers' and the teachers' work experience using averages.

Table 2. *Workplace Trainers' and Teachers' Work Experience in Years*

Work experience	Workplace trainers Mean	Teachers Mean
As employee	14.4	5
As superior	5.2	3.5
As personnel trainer	0.6	0.2
As teacher	-	11.5

Nearly half the trainers and four out of ten teachers had college or AMK qualifications. One out of ten trainers and three out of ten teachers had completed university studies. They were also asked what kind of and how much work experience they have. The trainers had more employee-level work experience (on average 14.4 years) than the teachers (on average 5 years). As regards a superior's duties, the trainers had on average 5.2 and the teachers on average 3.5 years of experience. Of the trainers 16.4 per cent, of the teachers only 6.5 per cent had worked as personnel trainers. Some 20 per cent of the workplace trainers reported that in addition to the above they had also worked in miscellaneous other jobs; the average length of such jobs for the group as a whole was a little over 2 years. The teachers had been teaching, on average, for 11.5 years, which indicates that they are experienced in their present duties.

Nearly 60 per cent (118) of the trainers and 50 per cent (52) of the teachers had not taken part in workplace trainer training by April 1999. Eight trainers and 6 teachers did not answer the question.

Results

The employers judged their companies quite positively as learning environments in terms of provision of learning opportunities, giving feedback, encouraging the employees, shared learning, and provision of orientation training. However, the companies differed from each other in their views on regular collaboration with teachers, and in the extent that the workplace learners received individual mentoring. The study showed that collaboration between the enterprises and the schools was confined to the various work-based learning arrangements. The employers were also hesitant in their opinions about how much the educational establishments and the enterprises might learn from each other. The employers expected

more regular communication with the teachers and suggested that measures should be taken to ensure the continuity of and secure resources for work-based learning. Most of the employers were willing to commit themselves to offering work-based learning opportunities also in the future (Lasonen 1999a; 1999b). About 70 per cent of the employers estimated that their company would be able to take on new staff in the next five years.

In the students' opinion, the areas most profoundly fostered by their workplace learning period are their ability to understand and accept different people, the growth of their occupational competencies, their ability to solve problems and make decisions in authentic situations, their mastering the rhythm of their job, their learning to work under pressure, the growth of their self-confidence and self-esteem, and their learning to integrate theory and practice at the workplace (Lasonen, 1999a; 1999b). The students considered the atmosphere at the workplaces positive and encouraging. However, they thought that the theoretical modules taught at school between the workplace learning periods could be improved as regards supporting work-based learning. They also wanted opportunities to systematically exchange their work-based learning experiences with other students and teachers. The students felt that during their workplace learning period they had been least successful in achieving the skills required for handling things using a foreign language and for setting up an enterprise of one's own, writing skills, and a knowledge base for further studies.

An essential factor in the effectiveness of work-based learning is the nature and quality of the supervision that the learner is offered at the workplace. Organisation of supervision depends on cooperation between schools and workplaces and on their mutual respect. Answers to the second research question were sought also in the opinions expressed by the workplace trainers and the teachers about what they could learn from one another. These respondents' answers differed in some ways from those of the employers. Some half (50.8%) the trainers reported that collaboration with educational establishments had had a positive effect on the aims and operations of the workplace. One out of ten said that their own learning and occupational skills had also improved. Four trainers out of ten thought that collaboration had exerted no effect worth mentioning on the operations of the workplace.

The workplace trainers also assessed how on-the-job training differs from the earlier work practice. There were a total of 209 answers to this question. A total of 66 answers (31.6%) mentioned goal direction, methodical work, quality of performance, difficulty of assignments, and evaluation; only one answer characterised current work-based learning as less goal-directed than the earlier work practice. According to 60 answers (28.8%), the practical arrangements of work-based learning, linked with schedules, questions involving working hours, salaries and collaboration

with the educational establishments, were different from those associated with work practice. In 32 answers (15,3%) learning was considered to have become more self-directed or independent; there was one mention (0.5%) according to which the learners had become less independent. There were a total of 30 answers (14.4%) expressing the view that as compared to supervision of work practice, supervision of work-based learning had become more intensive, more personal or more protective. According to 22 answers (10.5%), the workplace learners were better prepared, more responsible as team members, and further along the path towards occupational competence than the trainees doing their work practice had been. There were 38 answers (some 18%) stating that no changes had been observed or that the respondent did not know or had no experience from the subject.

In most cases the workplace trainers estimated that they had succeeded in their job well (44%) or pretty well (43%) or even very well (6%), rarely that they had done badly (2%), while the rest did not know (5%). Lack of time (42%), student-related factors (24%), planning (9%), lack of supervisory skills (7%) and problems with flow of information (7%) were seen as the central problems involved in supervising work-based learning. Few respondents had any further plans concerning the duties of a workplace trainer.

According to the teachers, educational establishments can influence an enterprise's development through the students and the work-based learning assignments set to them, by offering the enterprise new knowledge and ideas, by training its staff, and by offering expert help when needed. As for the effect of school-enterprise collaboration on the schools, it was thought to shift the foci and amount of job-specific training offered by them, make the teacher's role and duties more varied, give the teachers an opportunity to update their familiarity with the workplace, and place curriculum development in a new kind of context.

Altogether, at the level of the agents mutual learning is at this stage taking place in an enthusiastic and positive atmosphere. An essential challenge is preparing all the enterprises and educational establishments of a locality for the change that will take place in two years' time, when all students in vocational secondary education will require an on-the-job placement.

Teachers and workplace trainers play a central role in supervising on-the-job training. The teacher creates the collaborative links with local enterprises and selects the jobs where the students will be placed, defines the goals of work-based learning, plans its scheduling and implementation, is responsible for assessment and for looking after the students' rights and for a part of the administration involved in the organisation of workplace learning periods (various curricula, contracts, written monitoring and so on). In addition, the teacher guides, supervises and encourages both the

students and the novice workplace trainers. Thus, the teacher plans, coordinates, implements and assesses, in collaboration with the other parties involved, the on-the-job periods as a part of a three-year study programme. The nature and quality of the collaboration between the teacher and the trainer can affect the implementation of a student's personal study programme. Where the teacher has an overall grasp of the programme as a whole, the trainer has an important role in its implementation during the workplace learning period. The workplace trainer plays a prominent role as a professional representing the student's intended occupation, as an expert in the enterprise and in its line of business, as a contact person between the enterprise and the educational establishment and, finally, as the student's model and supervisor and as a provider of empathic support.

Conclusions

This case study described one example of the implementation of a large-scale workplace learning and training project in upper secondary or high school education (ISCED 3) in Finland. The proportion of the Finnish young people applying for and entering upper secondary education is high in international comparison, indicating broad access to this type of education. As part of the educational system as a whole, vocational education faces great challenges involving the creation of a range of alternative progression routes for young people differing in their needs, motivation and learning skills.

The provision of three-year upper secondary education incorporating a minimum of six months' workplace learning period is an important but also a demanding undertaking. The courage shown in taking up this challenge reveals strong faith in the Finnish educational system's ability to renew itself and solve its problems but also on enterprises' willingness to assume shared responsibility for education. In the future, organising 40.000 young people yearly fruitful six-month workplace learning periods that motivate the different parties will, if successful, be an achievement comparable to the most large-scale creditable school reforms in Finland. The preliminary research findings of the follow-up study of the Bridge project are, particularly as regards the experiences reported by the enterprises and the students, promising, even if they do represent only a small and select sample of the populations they represent. The results so far of the Bridge project also demonstrate that while vocational education is in Finland school-based as compared to, for example, the vocational education systems of Austria and Germany, it is also capable of innovative reforms that draw on usages arising out of another tradition.

To sum up the students' reported experiences, while the workplaces and the jobs they did there provided the students with opportunities to grasp by experience situation-specific dimensions of the work for which they were preparing themselves, the educational establishments enabled them to gain a broader understanding of their future occupation (e.g. its social function, aesthetics, and ergonomics). Work-based learning entails the assumption that students will learn in a community of experienced practitioners, representing an attempt to situate learning in the context of its utilisation. Making use of authentic learning environments and the real-life problems that they generate is expected to improve the quality of learning. Establishing work-based learning opportunities requires the creation of mutually agreed networks between local enterprises and vocational education institutions. In such a context, educational and training organisations are also engaged in learning through co-operation with each other rather than operating as single units or as individuals. As regards students, work-based learning experiences may enable them to find out where to look for employment once they have completed their vocational qualifications.

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**PERSPECTIVES
ACROSS CONTINENTS**

REVIEW AND PREVIEW OF HIGHER VOCATIONAL EDUCATION: CHANGES IN HONG KONG AND INTERNATIONAL TRENDS

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Introduction

More and more countries are adopting national qualification frameworks. In Europe, EU legislation is referencing the UK National Vocational Qualifications (NVQs). These NVQs are not educational qualifications. International professional bodies are agreeing to recognise each other's professional qualifications which require higher education qualifications. Such policies incorporate frameworks, definitions and standards – usually defined (inadequately) in terms of entry level and length (years) of a qualification. Then there is "obsession with the issue of quality as one of the best indicators of quality in an institution (or individual)" (Ball, 1996). Although we may frequently be told that quality cannot be 'defined', it is axiomatic that qualifications depend on quality considerations and standards being explicit.

It is argued that, in Hong Kong and internationally, there should be qualification frameworks and that these should clearly set out the overlap of higher vocational qualifications with so-called academic qualifications. So-called because, in turn, many of these overlap with professional qualifications. In effect, all of these are *employment* qualifications. Two recent and comprehensive reports on higher education in Hong Kong are discussed. Issues will be discussed in terms of 'overlap' of: education/training; vocational/academic; professional/intellectual capabilities; conceptual/practical skills; key/core/transferable skills.

It is predicted that, internationally, the undergraduate (honours) degree will be four years full-time or the equivalent in terms of credit units. The higher (or advanced) diploma (HD) will be deemed equivalent to the first two years (or 50 % or the equivalent in credit units) of the four year degree in related areas. For this to be internationalised and for social recognition, the HD should be renamed 'Associate Degree' to align with nomenclature in the USA, and to improve the marketing of this type of qualification (Chan and Imrie, 1995).

The history of higher education will not repeat itself. Three principal considerations are selected. The first is that higher education systems are moving away from the single subject academic degree to become pluralistic in regard to provision and aspiration. The second is the strong commitment to establish a 'parity of esteem' between vocational and academic qualifications. And the third is that the artificial dichotomy between education and training is now being superseded and subsumed in the concept of learning – lifelong for the individual; organisational for corporate and community bodies.

Overlap

As noted above, overlap is a key issue and will be a recurring consideration. The overlap concept is acknowledged from Hawke¹ (1988) when he addressed issues of vocational excellence in higher education:

"A great many cooperative ventures depend not on the parties having identical objectives, but on there being sufficient overlap among their objectives for them to have a basis for collaboration."

Accordingly, is there sufficiency of overlap for development of policy and for operational purposes, in regard to the following considerations?

- education/training ... "The unhelpful distinction between education and training would dissolve into the more generous idea of learning." (Ball, 1990);
- key skills (HEC, 1997) core/specific/transferable skills; intellectual/practical skills;
- vocational/academic; or professional/intellectual ... "two distinct cultures in universities" (Hague, 1997);
- professional/vocational/academic qualifications.

¹. Professor Gary Hawke, Victoria University of Wellington, New Zealand, was Governor of a National Working Party which published the 'non-negotiable policy document' on Post-Compulsory Education and Training in 1989, for implementation in 1990.

Contexts

For this paper, review of higher vocational education in Hong Kong refers to three reports:

- Higher Education in Hong Kong (UGC, 1996)
- Strategic and Organisational Review of the Vocational Training Council (SQW, 1996)
- Strategic Plan for 1997–2002 (CityU, 1997)

The socio-political context is that of Hong Kong as a colonial territory, returned to China as a Special Administrative Region (SAR). The SAR designation is intended to indicate continuation of legal and economic arrangements for 50 years. The context for higher education is the English system constructed round the three year honours degree *and* the class-based preference for the socially-respectable academic degree against the vocational higher diploma (for example). England and Hong Kong have a three year honours degree. China has a four year degree – also, for example, Australia, Scotland and the USA. The SAR Chief Executive, Mr. Tung Chee-hwa, has made it quite clear that he intends Hong Kong to change to a four year (honours) degree; this would align Hong Kong with China (and the USA). He has wide support for this change which will probably remove the final year of secondary schooling. In his inaugural address on 1 July 1997, he announced that he would “review the academic system in terms of the length of and the interface between the various stages of education”.

It is predicted that the four year degree will become the accepted international norm. As credit unit systems spread as part of the internationalisation of higher education, there will be ongoing debate (and, no doubt, nationalistic differences) about what a ‘year’ is, and what ‘graduateness’ (HEQC, 1997) is, in regard to a four year degree. For illustration, compare City University of Hong Kong and Zhongshan University in Guangzhou, China (two hours away by train) with total teaching weeks per year of 28 and 41 respectively:

CityU:	three year honours degree; each year comprises two semesters of 14 weeks each; founded in 1984 as City Polytechnic of Hong Kong.
Zhongshan:	four year degree; each year comprises two semesters of 20–21 weeks each; founded in 1924 as Zongshan University.

'Higher Education in Hong Kong' (UGC, 1996)

The University Grants Committee (UGC), on behalf of Government, has funding and policy responsibilities for higher education in Hong Kong. This Report started formally with wide consultation regarding an Interim Report (UGC, 1994); it is the outcome of a "gargantuan" task which addresses the "whole of higher education" including the work of the Vocational Training Council (VTC). Accordingly the Report deals with 'sub-degree courses' (e.g. higher diploma) with the nomenclature described as "perhaps unfortunate: these courses are not inferior versions of degree courses". This key issue will be discussed further.

The Report notes policy, in Hong Kong and elsewhere, regarding supply/demand of sub-degree and degree holders and gives examples of "graduate substitution for technician labour". This is another issue which will be discussed in regard to the "major high-level labour shortage world-wide" of holders of higher vocational qualifications.

'Strategic and Organisational Review of the Vocational Training Council' (SQW, 1996)

The VTC was established in 1982. For completeness, reference is made to this review. The changes recommended are noted as being "long overdue" on the basis of "compelling evidence that the VTC has not responded sufficiently to ongoing changes in Hong Kong's economy". It is widely accepted that the economic infrastructures of most countries lack manpower at the higher vocational level and the VTC has two technical colleges and seven technical institutes to provide for Hong Kong's needs. The highest qualification offered by the VTC is the Higher Diploma (HD) and the first cohort of students graduated in July 1996. The HD is also offered by the two universities that were formerly polytechnics: City University of Hong Kong (CityU) and the Hong Kong Polytechnic University (PolyU). The HD is comparable to the HND (UK) and to the Associate Degree (USA).

The VTC appointed a new Executive Director in 1997 and a strategic plan has been approved. There is every indication that recommendations and issues identified in the Report are being dealt with promptly and professionally so that the VTC will be well-prepared to meet the challenges and opportunities of post-colonial Hong Kong well into the next century. The VTC has introduced formal quality assessment procedures for courses at its technical colleges (UGC, 1996). As noted by Boardman (1997), VTC must be responsive to the needs of employers through a "comprehensive quality review and audit system".

City University of Hong Kong (CityU) – College of Higher Vocational Studies

During the 1990s various adjustments were made to the higher education in Hong Kong. These included transfer of higher diploma courses from the two former polytechnics to the two new technical colleges of the VTC which enrolled their first students in 1993. The two polytechnics and Hong Kong Baptist College became universities at the end of 1994 with the role of the former described as 'emphasising the application of knowledge and vocational training' (UGC, 1993). The 1996 UGC Report expresses the view that these roles will continue to provide "diversity rather than uniformity" for the period 1996–2006.

CityU's Strategic Plan for 1997–2002 (CityU, 1997), makes it quite clear that the College² will continue to be an important part of the University. In effect, the College is a vocational Faculty and is responsible for about 36 % of CityU's total population of 13,000 full time equivalent or 18,000 students. CityU is introducing a credit unit system and the Plan notes that this should provide opportunity to increase linkage between the College and Faculties: "we should aim to open our own degree programmes to qualified College graduates" (CityU, 1997:17). This articulation issue will be discussed in regard to overlap concepts of education/training; academic/vocational/professional; and core/key/transferable skills.

Relativity and Parity of Esteem

Parity of esteem is the outcome of information interacting with opinion. The latter is strongly related to attitude i.e. disposition to value or esteem something with which is felt a natural affinity. For parity of esteem between higher vocational/academic qualifications such as the H(N)D and the honours degree, important considerations include:

- The first is commonality of academic content and learning outcomes. The more important skills and workplace attitudes become for gradueness (i.e. graduate preparedness for employment), the more esteemed will be H(N)D-type programmes which already incorporate provision for these so-called 'non-academic' outcomes. A distinguishing feature of H(N)D graduates is that they are more likely to be immediately pro-

² Author was the Foundation Principal of the College of Higher Vocational Studies, 1991–95.

ductive in first employment. "We should accentuate the different values of each type of qualification and allow parity of esteem to be earned." (Frazer, 1996)

- There are also pragmatic considerations of esteem for the H(N)D. Admissions tutors in universities are confident in their predisposition and decisions to admit H(N)D graduates to the final year of three year honours degrees (or the final two years of four year honours degrees). If they do well, all things being equal, this is certainly a form of parity.
- Another pragmatic consideration relates to the relative marketability of H(N)D and degree graduates. Table 1 shows a comparison based on CityU's annual employment survey of full-time graduates³. In 1996, 2783 graduates (91.3 %) completed the survey.

Table 2 gives a wider comparison of HD marketability in Hong Kong where, as previously noted, there are three principal sources of HD graduates: CityU, PolyU, and two Hong Kong Technical Colleges. The universities are the responsibility of the UGC; the Colleges are the responsibility of the VTC. As shown in the table, evidently the HD graduate is in demand and, in this regard, the qualification has near parity of esteem with BD graduates.

As well as institutional and labour market esteem, there are other considerations. One relates to the membership requirements of professional bodies that emphasise the honours degree for full membership/registration. Using engineering as an example, the Hong Kong Institute of Engineers has not yet decided whether to link Associate Membership with the HD only. In the UK, membership requirements are being 'upgraded' to offset perceived inadequacies or 'academic drift' with some three year BEng degree courses. Full membership will require a four year degree and the Incorporated Engineer will require a three year degree – a relative parity of esteem!

A second is the esteem of the public (parents and schoolteachers) which puts an honours degree well ahead of the HD, and a university well ahead of a college or polytechnic. In this regard, in Hong Kong, CityU is the first choice for the majority of applicants for HD programmes. An important factor was the change from polytechnic to university status in 1994; another is the high profile identity of CityU's College of Higher Vocational Studies as the vocational faculty of a progressive university.

However, the misleading perception of higher diplomas as 'sub-degrees' should be corrected since they are high level qualifications "in their own right" (Chan and Imrie, 1995). This is also a point made by the UGC (1996) noting that such courses have different aims from degree courses. "They

³ This survey was conducted by the Student Affairs Office of City University of Hong Kong.

Table 1. Overall Basic Monthly Salary by Level of Award (1993-96).

LEVEL	YEAR OF GRADUATION			
	1993	1994	1995	1996
Bachelor Degree (BD)	9103 (10.9%)	10554 (15.9%)	10970 (4.0%)	10929 (-0.4%)
Higher Diploma (HD)	8195 (10.2%)	9029 (10.2%)	9578 (6.1%)	9761 (1.9%)
BD - HD	908 (10.0%)	1525 (14.4%)	1393 (12.7%)	1168 (10.7%)
Diploma (D)	10870 (10.8%)	11924 (9.7 %)	13251 (11.1%)	14091 (6.3%)
Overall	8846 (10.2%)*	10132 14.5%)*	10742 (6.0%)*	10778 (0.3%)*

*(% of increase over previous year)

Table 2. Average Basic Monthly Salary [HK\$] for 1996 Graduates.

INSTITUTION	LEVEL OF AWARD (HONG KONG)		
	Bachelor Degree	Higher Degree	Diploma
	BD	HD	D
City University of Hong Kong (CityU)	10,929	9,761	14,091*
The HK Polytechnic University (PolyU)	11,655	9,948	13,998*
Hong Kong Technical Colleges (VTC)	n/a	9,879	8,863

* This is the Diploma in Social Work. The monthly starting salary for DSW graduates is high. It is set by Government.

are of major value in their own right and lead to qualifications which for many purposes are more valuable than a degree." The aims often overlap since both types of qualification are intended to prepare their holders for employment.

Labour Market Considerations

For higher vocational qualifications, a discussion of labour market considerations in Hong Kong has been provided by Imrie (1995b). A recent example will make the point about supply and demand compounded by over-supply of graduates resulting in "graduate substitution" (UGC, 1996): "The major high-level labour shortage in many industries world-wide has for many years been not of graduates, but of diplomates and certificate holders". The UGC Report notes that the desired ratio of degree to diploma holder output is about 1.65 but the planned provision is of the order of 3. It refers to a survey by the Construction Industry Training Authority where graduate substitution for technician labour is recorded for the Building Services area. For discussion about ratios of degree/diploma holders, see Imrie (1995b). If graduates cannot get employment at the appropriate level, they will probably take jobs requiring a lower level qualification but might not be suited in terms of skills and attitude.

In Hong Kong the hotel industry is vitally important but the executive director of the Hong Kong Hotels Association notes that the supply of degree and VTC technical college graduates cannot meet the demand forecast at between 3,000 and 5,000 new workers every year (Sinclair, 1997). The hotel industry is enthusiastic about the quality of the VTC graduates who are "regarded as faster learners, more committed to the industry and better disciplined". But "it is still reasonable to conclude that the current balance of courses does not reflect adequately the requirements of Hong Kong's economy" (SQW, 1996a,b). For this conference, Boardman (1997) has set out a useful description of the work of the VTC, emphasising the importance of the VTC for producing "a well educated and skilled workforce" for Hong Kong's future prosperity. Also, as noted by Ngui (1996) from the literature on human resource development, "continuously enhancing the basic capabilities of people is essential to maintaining and accelerating the pace of economic growth".

International Trade Agreements and Quality Assurance

An international perspective is provided by the question (Ascher, 1997) "Is quality assurance in education consistent with international trade agreements?" He refers to the World Trade Organisation's General Agreement on Trade in Services (GATS) which "allows countries to recognize education, experience, licensing or certification obtained by services suppliers in other countries". GATS became effective on 1 January 1995, and the licensing of professionals to work in other countries is "to be based on objective

and transparent criteria such as competence and ability to provide the service".

Ascher (1997) discusses the potential promise of mutual recognition agreements (MRAs) and gives as an example the Washington Accord for accrediting engineering programmes in different countries. GATS has selected accountancy for starting its work to enable professionals to practise internationally. As well as the European Union directives, other international agreements with provision for professional services are noted:

- The North American Free Trade Agreement, 1 January 1994, contains provision similar to GATS to facilitate international practice of professions.
- Australia-New Zealand Closer Economic Relations Trade Agreement provides for mutual recognition of registrable occupations or professions. The agreement recognises equivalence of registration, *not* the equivalence of particular qualifications.

Credit Unit Systems and Quality Assurance

Another international trend in higher education is the adoption of modular credit unit systems and the development of national and international credit accumulation and transfer systems (CATS). (CATS are, in effect, mutual recognition agreements.) When discussing quality in 'Europe and beyond', Brennan (1993) refers to the difficulty of making judgements due to the "sheer size and complexity" of European Higher Education. The judgements refer to the relative quality of qualifications, systems and institutions, about which there might be "some potentially embarrassing questions".

In particular he notes that there are "various frameworks for mutual professional and academic recognition such as the National Academic Recognition Information Centres (NARIC) and the European Community Course Credit Transfer System (ECTS)". In ECTS (1994), 60 credits represent the workload of a year of study. There is a transcript of records which includes the ECTS credits and grades awarded according to the local grading scale and, when available, the ECTS grading scale. "By using ECTS, transparency of curricula and students' learning achievements is created, which in turn facilitates academic recognition."

The need for CATS within a national system is due to the ad hoc decisions of individual institutions without systemic implementation or coordination. The UK and Hong Kong could have learned from the experience of the USA which is the role model. For illustration, in Hong Kong, City University has based its credit unit system on a United States university while the University of Hong Kong has adopted the European Credit Transfer System (ECTS). ECTS will have significant impact on the future de-

velopment of European programmes and qualifications. At this stage only the Open University of Hong Kong has a fully developed CATS and this is also the basis for mutual institutional credit transfer arrangements with institutions overseas. "The UGC institutions see considerable difficulties in implementing a CAT arrangement at the undergraduate level" (UGC, 1996).

Internationalising higher education will depend on international mutual recognition agreements regarding quality and therefore quality assurance (Imrie, 1996e). Whether related to trade agreements, credit transfer systems, EU Directives, or professional body requirements, international standards will require quality assurance systems which are operationally effective. Professional or statutory body accreditation is used as a form of benchmarking. This will become a stronger trend as countries move from professional membership to full registration across the professions. More countries will establish national systems of quality assurance which, with international input, will also involve benchmarking, thus responding to the "challenge of global quality assurance" (Ball, 1996).

In Hong Kong, the UGC has assumed responsibility for quality assurance of teaching and learning in UGC-funded institutions and, in 1997, completed the first round of 'Teaching and Learning Quality Process Reviews' (TLQPRs). The TLQPR reports are published as part of accountability.

In England and Wales, there has been disaffection with previous arrangements for two different systems of audit (and enhancement) and assessment, the former being the responsibility of the Higher Education Quality Council, the latter the responsibility of Funding Councils. Audit and assessment are now the responsibility of the Quality Assurance Agency for Higher Education (QAAHE). This independent body was established on 1 April 1997 with functions to be transferred by 31 July 1997. At the time of writing, the Scottish Higher Education Funding Council has not yet committed itself to involvement with the QAAHE.

For many years before quality became part of the vocabulary of HE, professional or statutory bodies (PSBs) have exercised responsibility for quality through membership and accreditation requirements. The QAAHE is expected to develop liaison with PSBs if only to consider how to reduce the institutional burden of preparing (differently) for assessment and audit requirements of different bodies, at different times.

In 1997, another new agency was formed in England with responsibility for quality and standards. The Qualifications and Curriculum Authority (QCA) is the outcome of a merger of the National Council for Vocational Qualifications and the Schools Curriculum and Assessment Authority. The QCA is charged with establishing a national framework for all post-compulsory qualifications. Given its origins, it is not surprising that the QCA is committed to developing higher level (4 and 5) NVQs; also to promoting 'parity of esteem' between vocational and academic routes to higher education and employment.

In this regard, the HEQC Chief Executive advocates "the development of a consistent **qualifications framework** (*his emphasis*), desirably linked to levels and credits, so as to define more clearly the different types of award, the use and rationale for award titles, and the relationship and location each type of award within a structured set" (Brown, 1997).

This somewhat concise account of the outcomes of enormous amounts of discussion and consultation, suggests the following:

- The title of Brown's Inaugural Lecture (11.2.97) started with "If at first you don't succeed". Therefore, learn by reflecting on experience – your own and elsewhere.
- This UK experience is yet another example of the international trend towards establishing national qualification frameworks.
- Another trend is the increasing importance of the role of professional or statutory bodies for quality-related developments such as national and international standards for programmes and qualifications.
- Credit unit systems will continue to spread and form the international model of higher and continuing (professional) education programmes and qualifications
- International validation will increase. "Assuring that academic standards are met or maintained is crucial to the internationalising of university activity." (ABCD, 1997)

Professional, Vocational and Academic Qualifications

Full professional qualifications require at least an honours degree i.e. an academic qualification. Thus there is overlap. At the undergraduate and postgraduate degree level, it is customary to talk about academic qualifications in vocational fields such as engineering, medicine, law, accountancy, psychology, and teaching (but not at the university level – too academic perhaps?). Issues of professional accreditation and international recognition for professional body recognition of diploma-level qualifications are discussed by Imrie (1996b). It is worth noting that in Hong Kong, the Education Ordinance states that "recognized professionally" means being recognized as having attained the academic standard required by a professional body (HK Gazette, 1993). The honours degree is considered to represent a standard of intellectual capability (i.e. capacity and ability).

In Europe, as noted by the EU Directives, professional qualifications have priority for comparability since such qualifications provide the operational nexus for credentials and performance standards (quality) in the

commerce of nations. Internationally, as noted previously, the Washington Accord is an agreement between various autonomous national authorities which professionally accredit university degrees in engineering and recognize each other's accreditation. The signatories represent Australia, Canada, Hong Kong, Ireland, New Zealand, South Africa, UK, and the USA.

But what is the relationship between a 'vocational' degree and the higher diploma? In the UK, Nicholson (1996) recognises "the need to weld together academic and vocational routes and qualifications more strongly to provide a curriculum that allows more people to achieve". Higher Diploma graduates from City University of Hong Kong, are usually given recognition for direct entry to the final year of related English three year honours degree programmes (see later). However, the professional engineering bodies (now in the process of consolidating their professional qualifications) require the second and final years to be taken in the same institution. The Royal Academy of Engineering (Patel, 1997) has called for a radical restructuring of engineering degrees on the basis that the current system "has become of almost no relevance to students or employers". In effect, a four year honours degree is proposed for chartered engineering status, with a three year degree for training "support engineers" (incorporated engineer status).

In Australia, Morgan et al. (1996) studied similarities and differences of the Hong Kong Higher Diplomas in Engineering and the Australian Bachelor of Technology in Engineering. They conclude that the difference is only in the title of the award and that this may be a disadvantage for the diplomate as an engineering technologist. The solution, evidently, would be to confer an Associate Degree as equivalent to the first two years of a four year (honours) degree – as in the USA and in Australia. This would meet the requirements of the professional bodies e.g. for Associate Membership (Hong Kong) or Affiliate Membership (Australia). Ball (1990) also noted that the UK Higher National Diploma "might also be redesignated as an (unclassified) associate or foundation degree".

In the USA, the four year degree is in some disarray as evidenced by the low proportion of students completing engineering degrees in minimum time. Other comment includes "a first degree is usually worthless" (Greek, 1996), and a report that "castigated American colleges and universities for producing a low quality product that did not appeal to the corporate consumer" (Sidwell, 1996). The corporate classroom puts much more emphasis on vocational capabilities which employers in the USA and worldwide, are now insisting that universities provide or separate arrangements will (increasingly) be made. Private sector provision in the Asian context has been discussed by Imrie (1996c).

Europe and Beyond

The Council of the European Communities has published Directives for the recognition of professional education and training, which have the force of legislation. In summary (Imrie, 1996d), the First Diploma Directive (December 1988) is aimed at the recognition of diplomas for professional purposes. The Second Diploma Directive (June 1992) is intended to complement the first and includes in the definition of 'diploma', qualifications accredited as NVQs (or SVQs) at Levels 3 and 4 of the UK National Framework of Vocational Qualifications. The Mutual Recognition Directives relate to the recognition of 'regulated education and training'; they apply to 17 European countries. There is no single body responsible for the recognition of vocational qualifications in Europe. Each Member State has its own National Coordinator responsible for the implementation of Directives. For a full discussion, refer to Imrie (1996a,d).

In the UK, implementation of the Second Diploma Directive did not take place until late 1996. This noted a definition of 'Second General System Diploma' (HMSO, 1996) in terms of a post-secondary course which "will not have been a course of three or more years' duration if pursued full-time" or part-time equivalent, completed at a university or similar HEI.

For professional purposes (which usually take priority over academic purposes), the (UK) Engineering Council (1995), for example, sees the standards set by NVQs as the benchmarks for determining its requirements. It proposes a single national credit framework for all engineering-related education, whether in school, further education, higher education or work. NVQs are not higher education qualifications; in a discussion of vocational qualifications and standards (HEQC, 1995), it is noted that they are "designed to accredit occupational competence". One conclusion offered is that the overlap between academic awards and NVQs will "vary greatly from subject to subject"; another is that establishing equivalence will be difficult. But these conclusions do *not* apply to higher vocational qualifications awarded by higher education institutions.

Outside Europe, countries such as Australia, New Zealand and South Africa, have introduced qualification frameworks which are more comprehensive than NVQs. For example, the Australian Qualifications Framework (AQF, 1995), implemented on 1 January 1995, makes provision for all qualifications in post-compulsory education and training. There are twelve levels/titles with the top seven in the higher education sector: Doctoral Degree; Masters Degree; Graduate Diploma; Graduate Certificate; Bachelor Degree; *Advanced Diploma*; *Diploma*. As shown in Table 3, the latter two overlap with the vocational education and training sector thus linking vocational and academic qualifications. The Australian Vice Chancellors Committee is considering replacing advanced diplomas with associate

degrees. Of particular significance is that the AQF aims include the issue of "promoting national and international recognition of qualifications offered in Australia". This is a more useful and comprehensive framework than the NVQ Framework (UK).

Table 3. Australian Qualifications Framework – Sector Overlap of Equivalent Qualifications (Based on Principles for Articulation)

Vocational Education and Training Sector	Higher Education Sector
Advanced Diploma Diploma Certificate IV Certificate III Certificate II Certificate I	Doctoral Degree Masters Degree Graduate Diploma Graduate Certificate Bachelor Degree Advanced Diploma Diploma

The AQF identifies qualification level in terms of learning outcomes and statements of attainment for partial completion of a qualification. One other example comes from the Canadian Technology Human Resources Board which maintains national standards with one of the purposes being "to promote recognition of qualifications". Dating back to 1992, a national standard is defined as: "A description of the competencies expected of technologists at the point of entry to the labour market. It comprises a baseline of generic and discipline-specific knowledge and skills" (CTHRB, 1994). The correspondence of competencies and learning outcomes is a key issue; for higher diplomas, capability (HEC, 1997) subsumes competencies for the overlap with the bachelor honours degree to be effective for academic and professional purposes.

As a generalisation, the overlap between 'vocational' and 'academic' qualifications can be characterised by the following model (Figure 1a) of a proposed relationship for the Higher Diploma (HD) and the three year

honours degree at City University. There are different overlaps. One is the overlap of vocational/academic, academic/professional subjects; another is overlap between knowledge/skills/understanding, and a third is the overlap between concepts of year and level. Figure 1b shows correspondence with the Scottish system. In Hong Kong, entry to the HD is at O Level; honours degree at A Level.

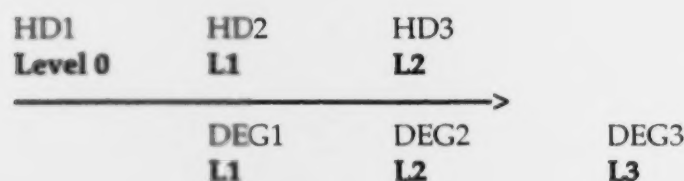


Figure 1a. Proposed Framework for Articulation of the Three Year Full-Time HD and Honours Degree at CityU and in Hong Kong

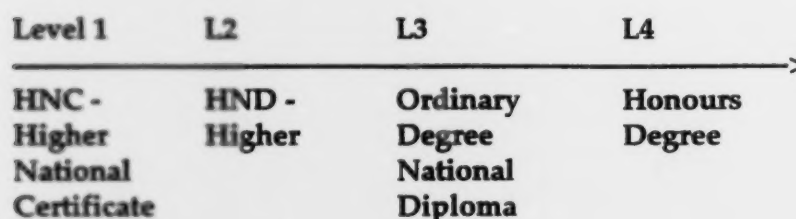


Figure 1b. Scottish Higher Education Qualifications System (4 year honours degree).

The Scottish system is managed by the Scottish Advisory Committee on Credit and Access. Each of the four undergraduate levels requires 120 credits (1 credit ~ 10 hours of study). For a masters degree, an additional 180 credits are required. The system provides exit qualifications at the different levels; also entry points for students to continue accumulating credit for higher qualifications.

For full credit systems, the distinction between part-time and full-time disappears. The year of study does not necessarily map exactly with the level of the course. The indication of levels is an example of overlap for the HD (after completion) with the degree for credit transfer. For example:

Up to two years advanced standing is given to CityU HD graduates by English universities e.g.

- HD Public Administration & Management – entry into final year of the BA(Hons) Social Policy, University of Newcastle;
- HD Business Studies – entry to final year of BBA honours programme at Nottingham Trent University.

Up to 50 % is given for credit transfer by the Open University of Hong Kong for degree award for a related higher diploma. Specifically, by special agreement for institutional credit transfer in applied computing and business administration, HD graduates get a total of 80 credits (50 %) towards the honours degree.

The dashed line indicates *equivalence* not equality on the basis of levels corresponding to required levels of intellectual ability, knowledge, discipline skill, and generic skill. The curriculum document has added significance and should reflect these levels – probably by using an agreed taxonomy or equivalent. While degree students might transfer to the HD, HD students would not be eligible for credit transfer until completion of the HD.

Although not 'academically acceptable' at CityU (or, indeed, in Hong Kong), this is the model for recognition of the HD by English Universities, in two forms:

- a) for HD graduates studying at English universities, entry to final year of the three year honours degree accepted in a range of disciplines (CityU, 1995)
- b) for HD graduates studying in Hong Kong, UK universities offer conversion programmes requiring two year's part-time study (Table 4).

Table 4. Conversion programmes offered through the School of Continuing and Professional Education, City University of Hong Kong.

Higher Diploma, CityU	Programme Title	Overseas Institution
HD in Public Administration and Management	BS (Hons) Public Administration and Management	De Montfort University
HD in Business Studies	BS (Hons) Business Administration and Management	De Montfort University
HD in Computing Science/Information Systems	BSc (Hons) Computing Science/BSc (Hons) Information Systems	Staffordshire University
HD in Accountancy	BS (Hons) Accounting	Napier University
HD in Banking and Financial Services	ACIB/BSc (Hons) Financial Services	University of Manchester

Pedagogical Considerations

Pedagogical considerations would be addressed through qualification frameworks with outcome levels related to appropriate taxonomies (Imrie, 1995a) developed for the regional or national context i.e. fitness for purpose (Ball, 1985). Issues of capability would be addressed in regard to generic, specific and optional competencies: criterion-referenced and without the compensations (HEQC, 1995) of (dubious) norm-referenced degree assessment. What are the standards in terms of final degree classifications? "Far from regarding the 'pass' as the threshold, students and staff regard a second class degree as the real minimum required – even a third is seen as a failure." (HEQC, 1996)

As noted previously, the concept of a 'year of study' would be represented in terms of outcomes rather than time, thus providing flexibility for lifelong learning and continuing professional education. The overlap of education and training should be designed for helpful integration of knowledge, attitudes and skills, rather than be used as an 'unhelpful distinction' which should 'dissolve into the more generous idea of learning' (Ball, 1990). Ball's advocacy is readily understood when you realise that he is chairman of a 'Campaign for Learning' in the UK. The significance of pedagogical considerations is further emphasised by Frazer's (1996) comment that "Assessment is the key to understanding any system of qualifications". The concept here is not that of dubious norm-referenced assessment but rather criterion-referenced assessment with explicit standards that identify what is expected as well as that which is inspected. Frazer (1996) illustrates the overlap concept with a Venn diagram (Figure 2).

The vocational qualifications (VQs) referred to by Frazer are peculiar to the UK system of NVQs. These are based on the demonstration of occupational competence in the work place, and accredited for a maximum of five years. Frazer refers to NVQ levels 4 and 5 as the 'higher levels'. The H(N)D is a higher vocational qualification which is awarded by an institution on the basis of satisfactory completion of an accredited programme. Figure 3 illustrates the overlapping interests and responsibilities of stakeholders in post compulsory education and training (PCET). These include industry (or employers), government, and PCET providers which may be government-funded or private.

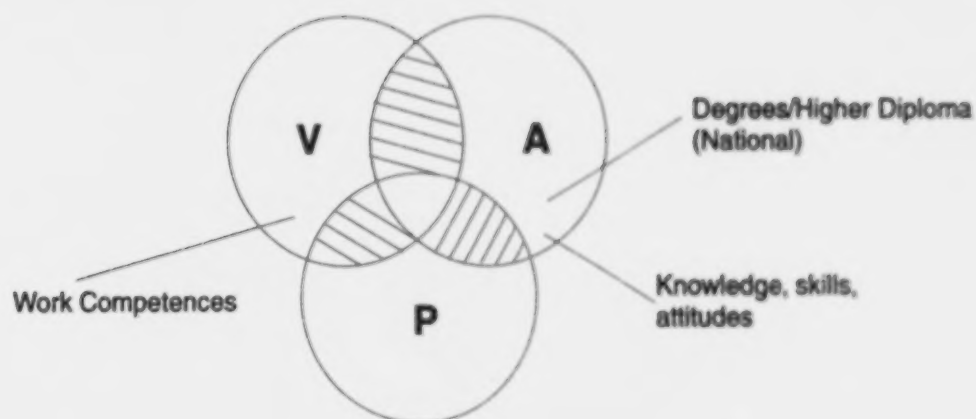


Figure 2. Relationships (Overlap) among Academic Awards (A), Professional Body Membership Qualifications (P) and Vocational Qualifications (V). (Frazer, 1996).

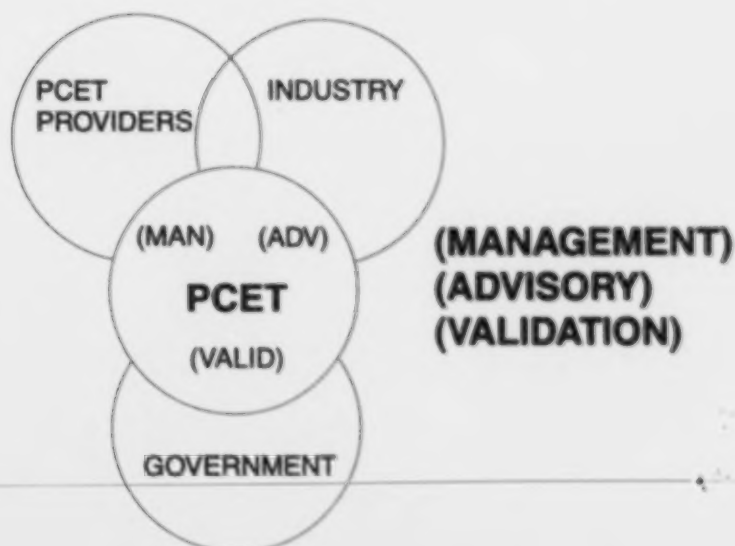


Figure 3. Overlap Implications for Post Compulsory Education and Training (PCET) (Imrie, 1989).

Key/Core/Transferable Skills

With continuing irreversible trends to provide more higher education for more diverse student populations, Ball (1996) revisited his thesis that 'more means different' (Ball, 1990). "*More* reminds us to place the clients (the potential students, their need and wants) before the service (the programme of courses offered by the university). ... *Different* implies that the so-called 'key skills' will become the heart of the curriculum, while the disciplines will take their place at the periphery as the secondary element in higher education." But, as noted by Hague (1997), "too few academics are interested in how students learn, leaving business to make up for their failings". The reason is that institutional management frequently uses the rhetoric of 'primacy of teaching' but rewards the scholarship of research over the scholarship of teaching.

Frazer also refers to 'key skills' and it is worth noting that 'Key Skills in Higher Education' (HEC, 1997) was the theme of a one day conference in the UK. HEC (1997) notes that capability is the ability to *use* skills and knowledge appropriately and effectively thus indicating the importance of understanding in any taxonomy of operational assessment.

In keeping with quality defined or redefined as 'fitness for purpose' (Ball, 1990), the concept of key skills is described by Frearson (1997) and related to both 'fitness for award' and 'fitness for employment'. Both are central to the mission of PCET or higher education. Issues of social demand and employer demand are discussed by Roizen and Jepson (1985) in regard to employer expectations of higher education that identified 'shortages of skills' without being specific. These key/core/transferable skills are now being specified. But there is also comment that these "notions ... have not yet received full critical scrutiny" (SRHE, 1996). It is worth noting that Hind (1989) in his guides on transferable personal skills, commented that this was a new term. Employers are reported (CBI, 1994) as being 'dissatisfied' with core skills of degree graduates: personal and interpersonal skills, communication, information technology, application of number, problem solving, modern foreign language competence.

However, a key consideration is that of attitude – skills are not in themselves sufficient guarantee of employer satisfaction. Harvey et al. (1997) recommend that attitude and 'cultural' preparation for the workplace should be developed as a partnership between higher education and employers. This, of course, is the model advocated by the World Association for Cooperative Education (WACE)⁴. In Japan, in-company training is a central feature of higher education. On-the-job and off-the-job training are

⁴ For information about WACE, contact the Executive Director at <pfranks@lynx.neu.edu> or homepage <<http://www.dac.neu.edu/wace>>.

used "to make up the gaps between the ideal and the reality of new employees" (Masuda and Muta, 1996). As mentioned previously, this is an example of leaving it to business. Just as employers have to respond to the lack of preparedness for work of new (first-time) employees, so too should HEIs make provision for the lack of preparedness of first years students for study.

Concluding Comments

For higher vocational qualifications awarded by higher education institutions (HEIs) such as the higher diploma, there is *significant overlap* with the honours degree in relevant knowledge, skill and attitude domains. This reflects the *plurality of purposes* now represented by current developments of higher education to meet the needs of wider and recurring access. For sustainable economic development, countries can no longer afford HE systems that are intellectually elitist or preoccupied with the full-time (honours) degree. Social perceptions, nationally and internationally, indicate that the higher diploma will be more acceptable if renamed as an *associate degree* while retaining the emphasis of preparation for the workplace. The degree curriculum also needs to 'overlap' in this regard. The goal should be to provide systems of employment qualifications for the next century.

It is predicted that the *international benchmark* will be the four year degree based on a credit (transfer) system that will specify level in terms of outcomes of learning representing an education/training spectrum (not dichotomy). Accordingly, it will be generally accepted that, in cognate areas, the associate degree will be articulated with the honours degree on a 2+2 or 50 % basis and that this will also be the *international standard* for professional bodies. Credit systems will provide for national and international flexibility in regard to credit accumulation, transfer, and recognition of prior learning experience.

To offset the potential of credit unit systems to cause fragmentary learning, professional bodies and employers will require HEIs to provide core programmes according to discipline or employment areas. As part of core programmes related to employment sectors, pedagogical requirements will include development of skills or capabilities, ethics or social responsibility, and affective considerations, so that the *educational* qualification represents better preparedness for *employment*. Quality assurance systems will be essential for mutual and international recognition of national qualification frameworks.

Although independent national and international conferences address these issues, effective policy will require governmental initiatives to bring together enthusiastic stakeholders and forge their joint commitment to

doing better with the promotion of higher vocational qualifications to meet the social and economic needs of generations to come. Lifelong employability and personal wellbeing are justifiable goals for our future communities.

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A COMPARISON OF OCCUPATIONAL PROGRAMS IN COMPREHENSIVE HIGH SCHOOLS IN THE USA, JAPAN, AND TAIWAN

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Introduction and Purpose

In Taiwan, the academic-oriented SHS (Specialized High School) and the occupational-oriented SVS (Specialized Vocational School) have been separated. The occupational programs in these SVS's have normally been three-year occupational preparation programs (see Figure 1). Sponsored and directed by the Ministry of Education (MOE), 18 SHS's or SVS's began to try out a three-year (grades 10–12) America-style CHS (Comprehensive High School) in the 1996 school year. Students in this system are required to take one-year core courses in 10th grade and to select one of the following three pathways at the beginning of grade 11: academic (college bound), occupational (job-training-oriented), and general (a mix of academic and occupational options). This occupational program provides students with only two years of occupational preparation (see Figure 1). After July 1, 1997, the number of CHS's in Taiwan will increase to 44. Because every CHS is required to offer at least two occupational programs for students to choose from, all 44 schools must restructure or develop a new design for their occupational programs.

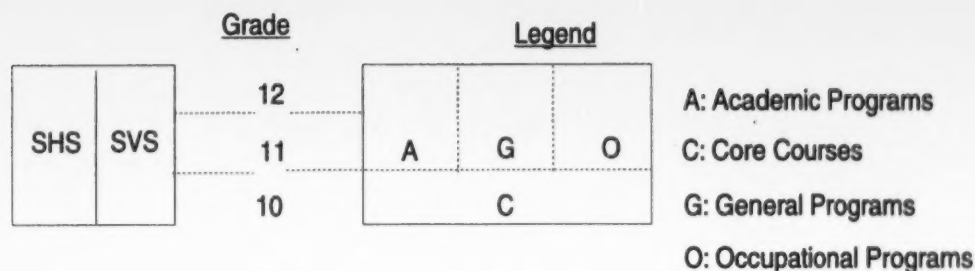


Figure 1. Separated SHS and SVS (Left) and CHS (Right).

The CHS system has been widely used in the U.S.A. for a long time and Japan implemented its CHS system in 1994. In order to learn about experiences with CHS in the U.S.A. and Japan to suggest further CHS reforms in Taiwan, the author with the sponsorship of the MOE participated in a mission which visited 13 educational institutes related to CHS in the U.S.A. and Japan in May 1997. As a result of this field visitation and review of related literature, a comparison of occupational programs in the CHS's in the U.S.A., Japan and Taiwan was made and implications for Taiwan are suggested in this paper.

Conceptual Bases and Significance of This Study

In Taiwan, a CHS curriculum planning team was organized in 1994 to assist the MOE to guide CHS program development. As the co-director of the planning team, the author was expected to counsel educators involved in CHS development concerning curriculum rationale and design, which included the design of occupational programs. This comparative study in education mainly contributed to a better understanding of education at home and education reform. Accordingly, a comparative study on occupational programs in CHS's in the USA, Japan and Taiwan is crucial and can enhance international understanding.

Procedures and Methods

Employing Bereday's four-stage approach (i.e., description-interpretation-juxtaposition-comparison) (Trethewey, 1976), the author collected and colated data relevant to this topic in three countries, then interpreted, juxtaposed and compared the collected data, and finally drew conclusions. As mentioned before, the country-specific data were collected through a field visitation and a literature review.

Findings and Conclusions

In the USA, occupational programs found in CHS's usually offer occupational skill development in selected vocational fields (Ryan & Imel, 1996). Due to budget constraints and student numbers, these programs are often limited to four or five occupational areas. In larger cities, area vocational centers and magnet schools in vocational education often support CHS's by offering vocational courses. In Japan, the CHS (called "integrated course") program is obviously an integration of academic and occupational learning, so its occupational programs are very career-development-oriented (Donohue, 1992; Ministry of Education, Science and Culture, 1993). Those program graduates who want to be directly employed may receive good training in firm-based or public training centers. In Taiwan, occupational programs in CHS's focus on occupations related to tertiary-level industries. Every CHS is required to offer at least two programs for students to choose from. The main themes of CHS occupational programs in these three countries are shown in Table 1.

At least, the following indications can be found in Table 1:

1. American CHSs normally span four years and provide a longer time (two years) for students to explore career options prior to entering occupational programs. This means that Taiwanese CHS's must effectively help their students decide on career pathways in grade 10.
2. American middle-school graduates are normally geographically admitted to neighbourhood high schools or geographically-transported to magnet high schools, so CHS students are more "comprehensive" than are students in Japanese and Taiwanese CHS's which mainly admit students based on an entrance examination. This suggests that Taiwanese CHS students should be enrolled through attendance boundaries and school of choice.
3. Individual development of students is emphasized based on CHS learner outcome in all three countries, but the CHS's in both America and Japan achieve more integration of academic and occupational learning than do those in Taiwan. This implies that occupational programs in Taiwanese CHS's should serve not only those students who want to directly enter the workplace, but also those who want to pursue further study in institutions of higher education through adaptive course offerings.
4. CHS's in both America and Japan are primarily public, but a large portion of the CHS's in Taiwan are private. This indicates that more effort should be made to enhance goal-attainment, cross-school cooperation, etc., for the CHS occupational programs.

Table 1. *Main Themes of CHS Occupational Programs in the USA, Japan and Taiwan*

Focus	USA	Japan	Taiwan
CHS Length (years)	4, mainly	3	3
Occupational Program Length (years)	2	2	2
Student Admission	* Neighborhood * Magnet	* Neighborhood * Magnet * Bidding screening ¹	* Bidding screening
Learner Outcomes	* Equal opportunity * Development of individual potential * Satisfaction of workforce needs	* Full development of personality * Flexibility * Responsibility	* Adaptability * Flexibility * Satisfaction of workforce needs
Learning Process	* New emphasis: - School-to-work transition - Tech Prep	* Career cluster * Individualized study program	* Core fields plus options * Basic and employable skills
Organization	Decentralized	Centralized	Centralized
School	Public	Public, mainly	Private and public

¹ In a bidding screening mechanism, candidates who obtain higher exam scores have higher priority in choosing schools.

Implications and Recommendations

Honolulu, Hawaii, USA, is an international city in which the West meets East and has many Taiwanese, Japanese and American residents. Many claim that they can tell Taiwanese houses there from Japanese and American houses by the yard plants. In the front- and back-yards of their houses, Americans like to grow flowers and grasses, Japanese like to grow trees, and Taiwanese like to grow fruit trees and vegetables. Risking oversimplification, these preferences may be linked to that the American preference

for "diversity", and the Japanese preference for "uniqueness", and the Taiwanese preference for "practicality".

In terms of practicality and in line with the findings noted earlier, Taiwan should adopt the strengths found in both American and Japanese CHS systems and adapt them to the context in Taiwan. Based on this comparative study, at least the following four recommendations for occupational programs in Taiwanese CHS's can be made: (1) In light of program goals, a compromise between specific job training and broad career development should be made. (2) In view of the preceding requirement, the integration of academic and occupational learning should be strengthened. (3) In order to increase students' options, more programs should be offered by strengthening cross-school cooperation. (4) More efforts should be made to assess community and students' needs when occupational programs are developed or redesigned.

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CHALLENGES OF THE 21ST CENTURY FOR TECHNICAL- VOCATIONAL EDUCATION AND TRAINING FROM GLOBAL, REGIONAL AND NATIONAL PERSPECTIVES¹

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Introduction

Colombo Plan Staff College for Technician Education (CPSC), which is a unique inter-governmental organization of nineteen member countries in Asia and the Pacific region, was established more than twenty-three years ago to improve the quality and relevance of Technical and Vocational Education and Training (TVET) in the member countries. While celebrating the 23rd Anniversary of CPSC's founding, the President of the Host Government of the Philippines, HE Fidel V. Ramos, remarked that "there is no doubt anymore that social and economic progress of the Asia-Pacific region requires high quality innovative and relevant technology training and education systems". In spite of great geographical, economic, social and demographic diversities of the countries around the world, the relevance of the above remark remains applicable in almost all the countries, East or West, North or South. In the twenty-first century, the quality of a country's human resources will determine its ability to compete in international markets and assure the well-being of its citizens. TVET represents the best possible long-term investment for growth and human development.

¹ Presented at the IVETA Conference, Helsinki, Finland, August 24-28, 1997

Coming from the Asia-Pacific region, and spending much of my professional life in many Asia-Pacific countries, I would like to focus my attention to the challenges of the 21st century for technical-vocational education and training in the context of the Asia-Pacific. There is one more reason for my focus on Asia-Pacific. *The Asian Development Outlook 1997/8*, prepared by ADB, points out that the developing Asia during the past decade, recorded remarkable buoyant economic performance, achieving an overall growth rate of 7.9 percent in 1995 (Asian Development Bank, 1997; Ibrahim, 1996). Although the rate of growth of most Asian economies moderated in 1996, Asia continued to grow at a much faster rate than the rest of the world. ADB outlook projects a stable growth rate for Asia. China will continue to grow at a very fast rate. East Asia is the fastest growing region in the world today. Asia's open market policy is also bearing positive results.

The Human Resource Development (HRD) theory recognizes the role of dynamic, innovative and flexible TVET for raising productivity as the ultimate engine of socio-economic growth and political stability. In order to meet the challenges of the 21st century and to prepare a coherent strategy of TVET, it is necessary to examine the existing and emerging critical issues and examine the experiences of the East Asia Tigers. We may develop strategies of TVET and HRD in other regions of the world in the light of experience gained in East Asia.

The issues which will have profound effect on TVET in the next millennium include:

- population growth and rapid urbanization;
- poverty and lack of skills for income-generation;
- increasing demand for secondary education, technical education and female education;
- technological change and labour market shift;
- international labour migration;
- changing patterns of international trade, liberalization and globalization of the workforce;
- pollution and environmental degradation;
- new technologies of training for TVET education.

Each of these issues need in-depth analysis in the context of individual countries. I shall only present a generalized scenario in this paper.

Challenges for HRD and TVET

Population Growth and Urbanization

At the beginning of this century, the population of the earth, after thousands of years of development of civilization, reached one billion people. At the beginning of the new century we will have about six billion people on earth, and this number continues to grow rapidly, presently at ninety million people per year. A projection from the United Nations gives the world population in 2150 as 694 billion, based on current growth rates in the different parts of the world. Thirteen "Mega Cities" with more than ten million population each will grow in Asia alone in the next twenty-five to thirty years.

In some of the industrialized developed countries, the main concern is the re-skilling of the *ageing population*. The high rate of population growth added with rapid urbanization in many countries, and general improvement of communication techniques and higher level of aspirations and democratization would require new strategies of education and training for skill-development and income-generation. Technology education at all levels of education will play critical roles in this changing process.

Poverty and Lack of Skills for Income-generation in Rural Areas

Poverty remains a critical problem and continue to pose a great challenge at dawn of the 21st century. This is a number one problem in many countries in Africa, Asia and Latin America. The 1997 Human Development Report prepared by UNDP draws attention to this important issue once again (UNDP, 1997). Approximately 800 million people in Asia and the Pacific live below the poverty line. The great majority of the poor live in rural areas. Many poor do not have enough skills to find productive employment. Rural poverty continues to pose one of the greatest development challenges in many developing countries, particularly in countries with low per capita income. Eradication of poverty in many developing countries cannot be effected without carefully coordinated remedial strategies, policies and programs related to skill-development for income-generation.

Moreover, there is often a persistent bias against investment in skill-development for women who have less opportunities for education and training than do their male counterparts. Women must be brought into the mainstream of economic policy and develop skills for income-generation and self-reliance. Currently, following the successful Grameen Bank Model of Bangladesh, micro-credit and enterprise development is gaining grounds as a poverty-alleviation strategy, particularly for rural women.

The World Bank has now taken the lead to provide micro-credit for entrepreneurship development. Technical education and training must provide support for such skill-development and income-generating programs.

Unemployment and Underemployment

Millions of workers in developing countries and also in some developed countries are unemployed or underemployed. They need re-training and re-skilling to become productive workers again. In Sub-Saharan Africa, all the countries had more than single-digit unemployment figures in the 80s. In Latin America, urban unemployment has been above 8 percent. India and Pakistan, despite respectable GDP growth rates, had unemployment rates above 15 percent. Only the East Asian countries had low unemployment rates – below 3 percent (UNDP, Human Development Report 1996; Haan, 1994).

Increasing Demand for Secondary Education, Technical Education and Female Education

Technical-vocational education and training are areas of major interest in Asian countries, especially in those reflecting a singular economic growth like those in South-East Asia and China. Most countries in the region regard TVET as being pivotal to their development as it is intimately linked to job creation, employment provision, income-generation and life skills-training.

The growth in the enrolment in technical/vocational education, as a percentage of secondary education, is a salient feature in the countries of the region. The increase in the number of students is most apparent in countries whose economies are in transition or rapid growth, such as in South-East Asia and China.

Similarly, the percentage of female students enrolled in TVET has witnessed significant increase in some Asian countries. This trend is likely to continue in other countries of the region and will have considerable impact on enrolment in TVET, and supply female technicians in the job market.

Technological Change and Labour Market Shift

Many countries are fast adopting the new and emerging technologies in industry and agriculture. The new technologies, in general, need higher knowledge-base and would require knowledge-intensive application. The role of manual skills are going down. This has profound effect on employment, education and training of technical manpower, and training of teach-

ers of TVET. One analysis (World Bank, 1991) recognizes six main elements of technological transformation:

- the increased rate of technological innovation (especially in micro-electronics, bio-technology, and new materials);
- the cross-cutting nature of technological change (the application effect); shortened technology life cycles and flexibility in meeting needs;
- increased automation with a smaller role for unskilled labour;
- increased energy and material savings;
- substitution of traditional materials with new ones.

Changing Patterns of International Trade, Liberalization and Globalization of the Workforce

International trade and investment have expanded rapidly during the past decade. Trade liberalization and structural reforms have been initiated by most of the countries.

The two most populous countries in Asia, India and China, are moving towards the market economy. The GATT agreement, the creation of APEC, WTO, and other organizations will further accelerate the process of globalization of trade and commerce leading to creating a global workforce. The Information Technology Agreement (ITA) in the last WTO meeting in Singapore has added a new dimension to IT. To remain competitive in the global workforce, high productivity and appropriate skills are needed by the workers. Continuing professional education will become imperative with the onset of global trade liberalization. One study conducted by the Center for Occupational Research and Development (CORD, 1997) has identified the following critical needs for business and industry in the next century. These are:

- Basic skills, including English as a second language, and workforce literacy skills including mathematics;
- Planning, decision-making, critical-thinking, and problem-solving skills;
- Interpersonal communication skills, sensitivity to workforce diversity, and cultural awareness;
- Ethics, management and leadership skills, and quality tools and techniques;
- Hands-on training and technical skills in specific demand occupations and industries;
- Computer training, including Internet training.

The study shows that if companies and the workforce are to be ready for the future, there must be more collaboration between business, industry, and education.

Pollution and Environmental Degradation

Pollution and environmental degradation has phenomenally increased in developing countries along with industrial development and population growth. Agenda 21 of the UNCED made it clear that "education is critical for promoting sustainable development". Proposals in Agenda 21 focus on re-orienting education and training at all levels, particularly of the teachers towards sustainable development. This is an urgent global need.

As ESCAP (Basu, 1996) points out, five aspects of the environmental situation in the Asian and Pacific region require urgent policy intervention:

- Unsustainable human settlements environments, including inadequate or inappropriate shelter, lack of water supply, poor sanitation, poor nutrition, shortage of cooking fuel, excessive use of agro-chemicals, and increasingly concentrated habitation of environmentally fragile and hazard-prone areas.
- Pollution, including pollution of ambient air in cities and of household air in villages; pollution of lakes, rivers, underground reservoirs and marine water; toxic and nuclear waste dumping; and environmental hazards emanating from energy-related activities.
- Degradation and destruction of natural resources, including excessive resource extraction, loss of biological diversity, deforestation, soil erosion, soil fertility loss, waterlogging, salinization and toxification of soils, damage to and destruction of coastal and marine resources, and depletion of fresh water supplies.
- Environmental calamities and natural disasters, such as floods, droughts, cyclones and storm surges, earthquakes, landslides and volcanic eruptions, which periodically affect many countries in the region, causing increasing loss of life and damage to property and infrastructure under conditions of growing population pressure.
- Global environmental problems, particularly the greenhouse effect, ozone depletion and bio-diversity loss, which are intensifying the threat to already widespread environmental degradation in the region.

New Technologies of Training for TVET

New technologies of training (NTT) has been introduced in many countries and can go a long way to facilitate the process of curriculum develop-

ment and curriculum delivery for the 21st century. Satellite communication, electronic media, computer technology, telecommunication and internet facilities are introducing a fundamental shift in the nature of education and training. In the new context, the teachers would interact very differently with students, more as guides and mentors and less like instructors or lecturers. These new technologies and their appropriate applications are being progressively introduced in many countries in Asia-Pacific. Countries like Singapore, Malaysia, Thailand, Philippines, India, Pakistan, and so forth are already in the path of applying the NTT in educational institutions. Some of the other developing countries have started building the necessary human and technological resources to deploy NTT in education. However, TVET do not yet make full use of these new technologies of training.

As the Delors Report (1996) prepared by UNESCO points out, nothing can entirely replace face-to-face tuition. Yet the media revolution is there and we should use it to our best advantage. New technology has created a host of new tools for use in the classroom, in laboratories, at home and on the move:

- computers of all sizes and sophistication;
- cable and satellite TV education broadcasting;
- multi-media equipment;
- interactive information exchange systems, including electronic mail and on-line access to libraries and public data bases;
- computerized simulators;
- virtual reality systems.

Using these tools, both students and teachers are equipped to become researchers. A new partnership between trainees and trainers is developing in the TVET classroom as well as in the non-formal situations.

Emerging Trends in TVET for the 21st Century

Skills and competencies necessary to meet the challenges of TVET will not be achieved through the traditional forms of TVET curriculum and delivery systems. A multi-dimensional approach is necessary to meet the objectives. These will include:

- more broad-based and flexible curriculum replacing skill-specific training programs;
- integration of training and education in cooperation with business, industries, education and private sectors;

- life-long and flexible learning to enable the professionals to meet the higher and varied demands of the job;
- knowledge and skills of using new technologies of training and education including the computers;
- development of multi-lingual and communication skills;
- increased emphasis on development of work ethics, teamwork, human values and other non-technical competencies like leadership, time management, environmental awareness, etc.
- development of self-employment and entrepreneurial skills.

The demands on TVET teachers' competence, professionalism, attitude, values and work ethics in the context of new and emerging technologies in the region as well as the globalization of the workforce would impose enormous responsibilities on TVET teachers in the 21st century. In many countries, quantitative expansion of TVET has put much pressure on quantity and quality of TVET teachers. Planning and implementation of reforms in TVET teacher training will require effective partnerships among: a) national planners; b) TVET institutions; c) teachers' organizations; d) media experts; and e) international agencies. The question is how to forge that partnership?

The role of technical and vocational education teachers is undergoing a radical change. Teachers are no longer just dispensers of information. They are expected to be curriculum designers, student counsellors, educational and resource managers, internet operators, and vocational practitioners. A recent UNESCO-UNEVOC Round Table Expert Group Meeting (Basu, 1997) in Brazil on Training of Technical and Vocational Teachers, highlighted the need for innovations and quality improvement in TVET teacher training programs to meet the challenges of the next century. Some of the countries have opted measures to cope with the emerging situation of teacher training. These include:

- recruitment of teachers from the world of business and industry;
- providing pre-service and in-service training with greater emphasis on practical skills training;
- establishment of closer links between institutions and industries for skill development of the TVET teachers;
- wider application of competency-based teacher education programs;
- focus on attitude, values, work ethics and non-technical competencies in TVET teacher-training programs.

Distance education has been adopted as a necessary supplementary mode to meet some of the critical needs of teacher-training in some of the countries in the region. The objectives of the distance learning program include:

- to update and upgrade a large number of serving technician teachers, teacher educators, and key personnel responsible for management and quality improvement of technical-vocational education and skills-development;
- to have convenient and continuing access to advance training which are of immediate relevance, cost-effective, and reflective of prime concerns of the developing member countries of the region;
- to contribute towards developing a cost-effective model for establishing distance education resource centre for technical-vocational education and skills-development;
- to promote innovations, research, and development for improvement of quality and relevance in technical-vocational education;
- to support technical cooperation among developing countries for designing appropriate methods and materials for distance education;
- to establish a network of international and national organizations for distance education for TVET.

Considering individual constraints and job requirements of technical workers, most of the continuing education programs may be given as on-the-job programs. To accommodate variable requirements, programs should be flexible in nature. The flexibility is provided in selecting the contents, time and duration of study, place of study, strategy (method and media) for study, etc. The learner should have the flexibility in choice of course content according to job requirements. This flexibility helps to motivate the learner to take part in the program.

Key Strategies for the Future

Looking ahead towards the 21st century and in the high tide of the *Information Age* (Gates, 1996), it is important to establish:

- a) stronger linkages between technical and vocational education and the world of work;
- b) stronger linkages between technical-vocational education and the general education in basic and secondary education systems;
- c) greater efforts to develop income-generating skills, particularly in rural areas, for poverty alleviation;
- d) greater effort to improve participation of women, handicapped people and other disadvantaged groups in skill-development programs;
- e) continuing system of curriculum renewal in the context of rapid changes in technology and the challenges of open global market economy;
- f) collaborative mechanism for national and international partnership programs.

To meet the demands and responsibilities of the 21st century the TVET teachers also must change and re-equip themselves on a continuing basis with broad based and flexible technical competencies, attitudes, and values as required in a global marketplace. Reforms of TVET teachers/trainers will include:

- a) provision of formal and non-formal methods of TVET teacher-training using contact and distance modes;
- b) improving the quality of technical and vocational teachers' education by placing greater emphasis on industry-oriented teacher training programs;
- c) recruiting TVET teachers from the world of work and training them through pre-service/in-service programs; and
- d) providing appropriate financial compensation/incentives to TVET teachers;
- e) raising the public image and status of TVET and TVET teachers.

National, regional and international agencies and NGOs must work together in a spirit of close partnerships to meet the challenges of TVET and Human Resource Development in the 21st century. IVETA, as the only international professional body in this field can do a great deal for qualitative improvement of TVET in the 21st century.

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HUMAN RESOURCE DEVELOPMENT AND LABOUR MARKET POLICY ISSUES IN THE ASIA PACIFIC: OPPORTUNITIES FOR COLLABORATIVE RESEARCH WITH EUROPE

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The stereotype of Asia and the Pacific, commonly referred to as the *Far East*, a distant side of the world. This geographical region is multi-cultural, socially diverse, and multi-lingual and where some of the poorest people live. It is hot, humid, and unpleasant for many who prefer the temperate environment. The Asia Pacific is not a place for the 'faint hearted' as some would describe it. Only the adventurous missionaries and the brave dare venture into the *Far East*.

There is a paradox in this view of the Far East. The British, Dutch, French, Spanish and Portuguese were Colonial powers in the *Far East* in the 13th to 16th centuries. Historical links between Europe and Asia underscore the relationships the two regions have had and still have, in commerce, industry and government. It is only recently that Britain returned its control of Hong Kong to the People's Republic of China. Asia has more links, historically and economically with Europe than many scholars and officials would acknowledge.

As John Naisbitt (1997) said in his book on Asia:

In the 1990's Asia came of age. As we move towards the year 2000, Asia will become the dominant region of the world, economically, politically and culturally. We are on the threshold of an Asian Renaissance. (1997:4)

He went on to observe that:

A new network of nations based on economic symbiosis is emerging: the Asian Network. A spirit of working together for mutual gain, a new Asian collaboration, is emerging for the first time. The catalyst is the free market. (1997:5)

In Naisbitt's experience after living and writing about in Asia for the last 30 years, and based on his interviews in the early 1990's with many contemporary business, academic and political leaders in the region, Naisbitt identified 8 megatrends in Asia today.

1. Trend from the dominance of the Nation States to *networks* – the eclipse of Japan as a nation state giving way to the emergence of China and the Chinese diaspora(networks) over Asia and the Pacific;
2. Shift from Export led economic growth to *Consumer driven* – the emergence of the middle class in Asia and the spending power will generate the wealth of nations not export;
3. Shift from Western dominated influence on competition and winner takes all to the *Asian style* of business practice and governance – the modernization of Asia will generate economic development unburdened by the welfare state, a model adopted by the West;
4. Transformation from Government controlled economies to *market driven economies* – the deregulation of the market and growth driven by regional markets where coordination and collaboration are principles of practice;
5. Migration from villages to the *supercities in Asia* – migrating from the rural areas to cities at a dramatic rate dominated by telecommunications and information;
6. Transformation from labour intensive to *technology intensive industries* – dominated by computers and telecommunications;
7. Shift from male dominated workforce to one where *women will dominate* – a trend to more women entrepreneurs, bosses, academics and in the workforce;
8. Shift in the global axis from the west to the East-Asia prospers, gains political power and is respected in the international arena.

One could argue with Naisbitt's explanation of how these trends came about but the mega-trends he has identified, struck a cord with many who study and comment on Asian current issues and academics who research the Asia Pacific. Incidentally, in the discussion and analysis of human resource development issues in the labour markets in this paper, Naisbitt's trends and observations are unmistakably reflected.

Given these global trends and observations, this paper argues for closer cooperation and collaboration between Europe and the Asia Pacific in

vocational education and training with industry, building on the historical links and forging of new ones for challenges in the next century.

To support this argument, this paper discusses the human resource development and labour market issues of the Asia Pacific region. It will outline 3 case studies of the labour markets in Australia, Malaysia and People's Republic of China. The case studies illustrate the complexity and diversity of developing or upgrading human capacities in the region. There is an overwhelming necessity for collective approaches by Europe and Asia Pacific regions to adjust vocational education policies to address the training needs of industry.

The paper concludes by suggesting strategies for collective action in collaborative research, systematic examination of ideas, strategies and sharing of resources by scholars and practitioners in vocational education and training in industry between the European Union Members and the countries of Asia Pacific.

The Asia Pacific Region

The definition of Asia can be confusing. It depends on who does the defining and from which perspective. Without engaging in a debate of where Asia begins and ends, the Asia region can be usefully identified as comprising two geographical regions:

- East Asia covers Mongolia in the north to Indonesia in the South and Australia and west as far as Myanmar, and
- South Asia refers to India and the surrounding countries and west to Afghanistan (Fitzgerald, 1997).

To complicate the issue, Dr C. Lever Tracy, an academic from the University of Adelaide argued following her research into Chinese business connections from Chin, that the terms, East and South Asia are anachronistic. They do not describe the reality of the region. She suggested that term *Greater Southern China* should be used to describe the Chinese diaspora from Southern China, which generated and sustained the commerce for centuries and continues to do so, in what is now East and South Asia.

Without extending this paper in to a debate on terminology on Asia, East Asia is the focus of the discussion in this paper when the term 'Asia Pacific' is sometimes used to refer to this region. Australia and New Zealand are part of the Asia Pacific region. East Asia and Asia Pacific are sometimes used interchangeably to refer to the same region.

Asia Pacific as an Economic Model

The rise of the Asia Pacific region since the 1970's has been dramatic in economic terms and the robust economies of Japan, Korea, Taiwan, Hong Kong and Singapore are models of economic *miracles* often quoted by commentators, policy makers and academics. The phenomenon is well documented in the economic and international relations literature by scholars. (Garnaut & Drysdale 1994, Lasserre & Schutte 1995, Islam & Chowdhury 1997, Berger & Borer 1997).

Later in the 1980's, Malaysia, Thailand, Indonesia and the Chinese coastal provincial cities of Luda, Beijing, Shanghai, Zhejiang, and Guangzhou in the People's Republic of China registered high average economic growth rates of 8 % to 10 %.

In the 1990's Philippines, Vietnam, and India are attempting to emulate the growth patterns of the neighbouring Asia Pacific economies with countries like the United States, Australia and New Zealand also trying to capture the same high economic growth rates demonstrated in the region. In spite of the corrections in foreign exchange, where the Thai baht, the Philippines peso, the Indonesian rupiah, and the Malaysian ringgit were devalued; the economies remain intact and resilient in the vicissitudes of the economic cycles.

Asia Pacific as Regional Markets

The Asia Pacific region is currently a consumer market of 3 billion people. In 1992, economists have estimated that the output of Asia Pacific was 21 % of the total world output. By 2011, it is estimated that the same region will produce 25 % of the world output. In certain sectors such as cement, telecommunications, advanced ceramics, international air traffic and insurance premiums, the Asia Pacific region contributes more than 25 % of the world output already. (Lasserre & Schutte, 1995:25)

Asia Pacific is also a resource base. It offers a vast reservoir of human, natural and technological resources. Natural resources for example, include minerals, gas petroleum, timber, rubber, edible fats and fisheries.

In human resource terms, the region's abundant workforce and low wages are attractive to labour intensive industries. As a result, industries such as electronic assembly, footwear, textiles and shoe manufacturing are located in the Special Economic Zones in Singapore, Malaysia, Indonesia, Taiwan and People's Republic of China. (Lasserre & Schutte, 1995:29)

The critical issue for the region is the extent to which the vocational training and knowledge bases supporting the various sectors are appropriate for achieving sustainable economic development.

Asia Pacific as a Source of Learning

The wisdom and experience of Asia Pacific in business, culture and strategies are a source of learning for students of business, organisational culture, management, investment and finance.

Asia Pacific could be called a permanent 'industrial Olympics'. It is an environment where world class competitors are matched against new comers and mavericks in winning contracts and deals. It is an endless source of learning the practice of business making, an inherent part of the culture of Asia..

Lasserre and Schuttle (1995:30) have identified Asia Pacific business philosophy, enterprise cultures and competitive approaches, ability to learn new business repertoires, new kinds of liaison with suppliers and innovative approaches to human resource management as a source of learning for many entrepreneurs.

The Asia Pacific region is significant from a number of perspectives. It had and continues to have, dynamic growth over a relatively short period of time; it has a vast potential as a market for consumers and a source of learning in the culture of business. In addition to the Asia Pacific region's impressive economic growth, the critical factor to sustain economic development lies in the ability to maintain a productive and satisfying lives for the 3 billion people who live on the region.

The key question for the region is to what extent are these areas of *tacit business knowledge* linked to international business environment and perhaps more importantly, are they linked to the global knowledge base for management.

Human Resource Development Issues

In the midst of the spectacular economic growth in Asia Pacific, other issues such as the air and water pollution, high rates of poverty, ageing of the population, diminished reverence for traditional culture and lack of universal education are issues that pose challenges to governments in the region.

The knowledge, pedagogy and facilities required to train the population, coupled with the changing nature of the knowledge-based society, present new challenges to Governments in the Asia Pacific region.

To discuss and capture HRD issues in the Asia Pacific, it is useful to examine selected countries in Asia Pacific. By selecting Australia, Malaysia and PR China as examples of diversity in the region and the need for different HRD strategies become apparent.

The Human Resource Development Outlook of 1995-1996 published by the Pacific Economic Cooperation Council (PECC) outlined issues in the Labour markets of the following countries (Stahl, 1996). These snapshots of the main features of the labour markets are meant to provide an overview of the shifts in occupations and industries. They oversimplify the complexities and idiosyncrasies of labour markets in the Asia Pacific region. The main point in this discussion is to illustrate the expected diversity of HRD and labour market issues as well as the common features which emerge in all of them.

Are these issues different from the those experienced by Members of the European Union?

To assess the labour markets which will follow, it is useful to be reminded of the 4 major international forces and trends affecting the labour markets.

These are:

Demography

- lower birth rates, more women in the workforce and greater life expectancy;

Trade

- international trade and capital flows have increased dramatically in recent years;

Communication

- communication revolutions have resulted in the diffusion of information and technological changes between countries;

Consumers

- consumer tastes are changing and they are better informed of goods and services available, globally. (EPAC: 1995)

Selected Labour Markets Profiles in the Asia Pacific

Australia

Australia has a population of 18 million and a workforce of slightly over 9 million, about half of the population with an unemployment rate of 8.5 % but, the unemployment rate for the cohort 14-24 years is 20 % (Ogawa, 1993). The economic growth rate is between 2 and 3 per cent per annum.

The Australian Labour market or 'job' market, has changed and shifted to adjust to changes in the nature of work, a changed industrial relations environment, the impact of technological revolution on work, the type of skills required and the consequential social change in society.

In Australia, the labour market is highly regulated and consecutive governments over the last decade have been reluctant to leave issues of unemployment to market forces. However, the newly elected Government in Australia indicated its intention and has taken action to deregulate the labour market. Historically, Australia's labour market is characterised by the following 5 main features:

- high degree of unionisation supported by comprehensive regulation of wages, conditions and disputes settlement system;
- high growth of labour force numbers and skills through immigration;
- state planned and funded tertiary education system;
- open ended and flat rate unemployment benefits, funded from tax general revenue;
- limited development of labour market programs and policy (Economic Planning and Advisory Commission 1995:ix)

In recent years, the Australian labour market has dramatically changed and its main features are:

- unemployment rates are higher (8.6% June 1997);
- workforce is more concentrated in the prime working age groups and older;
- workforce is better educated and has a higher proportion of females;
- more employment in Services industry than in Primary and Manufacturing industries;
- more decentralised wage determination and employment conditions than before;
- substantial growth in casual and part time, contract and self employment;
- business organisations have moved towards a flatter structure;
- reduced unionisation in the workplace is evident;
- industrial disputation has decreased dramatically.

Labour market flexibility is a major issue in Australia. Flexibility, economists argues, is the key to quick response to changing economic conditions and markets, vital to generating higher productivity, incomes and employment. Employee Unions seek to protect the employment prospects,

wages and conditions of their members. In between these forces may be a balance where there is labour market flexibility with equity and justice for workers.

The higher education system in Australia has been dramatically restructured in the 1990's with universities now taking a major role in vocational education and training, particularly in the business, commerce and management schools and departments.

Vocational education, skills enhancement and training are improving the flexibility and quality of the workforce but better targeting is required to meet employer demands and employee needs. Delivery of education and training services needs to address issues of efficiency and equity as well.

The key issue in Australia is to discover a flexible vocational education and training system which can efficiently and equitably deliver and complement Australia's industry's competition policy and social support system.

In 1994 the Australian government established the National Training Authority (ANTA) to implement its reform in vocational education and training strategy. The ANTA was to reform the training agenda in 4 directions:

- responsive to industry and maximising choice and cooperation between private, public and industry training providers;
- quality, to achieve the highest standards of training;
- accessibility, to all Australians who seek training and
- efficiency to achieve maximum output for the public dollar.

Since its establishment in 1994, and the election of a new conservative national government in 1996, ANTA has changed its direction towards a new apprenticeship scheme, to more vocationally oriented focus on the schools system, and a greater business focus. The articulation between TAFE and the schools system and indeed between TAFE and the University is growing in Australia.

The fundamental issue in Australian education is to two fold, one concerns articulating strategies to direct and manage the resources, capacities and minds of the whole National and State/Territory system to educate and train people with the capacities, knowledge and skills which industry, particularly small and medium enterprises, require to increase productivity and simultaneously remain competitive in the diverse Asia Pacific region. The other issue is to maintain a culture of leading edge research with internationally recognised capabilities, infrastructure supporting them and organisations which deliver technological, scientific and social innovation to generate new ideas and industries in Australia and internationally.

People's Republic of China

In a country of 1.3 billion people, the Republic of China has 70 per cent of its population living in rural regions and 73 percent of the workforce work in non-urban areas. By 1994, a Chinese survey estimated as many as 54.3 per cent of the population work in the agricultural sector and 45.7 per cent, in the non agricultural sector. It has been estimated that 100 million people are surplus to the needs of the agricultural sector. In 1994, it was interesting to note that a survey estimated 25 million Chinese moved from rural areas to the cities. (Dong, 1996:69)

The present labour market in the People's Republic of China presents a story of how a highly centralised and regulated employment system was replaced by one which is increasingly decentralised, deregulated and driven by 'market forces'. This shift in policy direction marks the overwhelming desire of the Chinese Government to industrialise and privatise its industry.

In rural China, the rapid growth of township and village enterprises (TVEs) and the decline of the Government owned enterprises (GOEs) contributed to the creation of a market and a demand for labour, separate from the traditional agricultural sector. In the urban and industrialised areas there is rapid growth in private enterprises and dramatic increase in self employment, although the predominantly State and collective-owned enterprises, in which there is some private ownership, have also increased but not to the same extent. In the 15 years from 1979 to 1994, it was estimated that 115 million new employment opportunities were created in the cities. During the same period, new employment grew by 44 percent in State and Collective owned enterprises. However, employment in the non State owned enterprises (private sector and self employed) increased by 3400 per cent.

These developments have also occurred in a context of a shift away from centralised, planned and guaranteed employment to one of individual contracts. In 1994 the 8th National People's Congress of the Republic of China passed a new labour law requiring all employees to sign a contract with their employers, guaranteed minimum wages were stipulated and a 40 hour week implemented instead of the 44 hours week. The new law came into effective from 1 July, 1995. According to recent statistics, 51 per cent of the total urban workforce of 51 million are on individual contracts. (Dong 1996:69)

The growth in employment in the cities of PR China has absorbed a huge surplus of labour from the agricultural sector; with a corresponding increase in demand on the housing, water, hospitals, schools and roads in the urban areas.

These features are classic manifestations of the urban pull of cities which invariably accompany the process of industrialisation and development.

It has been estimated that less than 20 % of technical workers have senior high schools and above, education, and 80 % of technical completed Primary school education. There are 70 million technical workers in China and every year, 2 million of the same workers are demanded by industry but only 1 million are produced by Chinese institutions.

One of the key issues in PR China concerns the strategies for dramatically increasing the technical and business skills base of its population to support its rapidly growing international business activities. Recognising the enormous labour market difficulties, the Chinese Government has accelerated the reforms of the State owned enterprises and clarified the legal and financial system to develop a secure market environment for private enterprise to flourish in China. In addition, the social insurance system has been established to encourage every worker to 'save for old age', unemployment and health benefits. The government of China has implemented 'Re-Employment' projects to encourage those who were retrenched from State owned enterprises to be obtain further employment in other industries.

As well, China has established new towns in rural areas to revitalise the country and secondary and tertiary industries are encouraged to locate in rural areas, in the hope that new employment will be generated to absorb the rural unemployed.

Finally and importantly, China has introduced an occupational certificate system to encourage employees to undertake training to obtain new skills or update them to the changing labour market in the PR China. On-the-job training for employees have also been introduced in industry, as well higher education for lawyers, accountants, engineers and other professionals are encouraged by the Government (Dong 1996:69).

Malaysia

In 1995, Malaysia had a population of 20 million, a workforce of 8.1 million and 2.9 % unemployment rate. It has an inflation rate of 3.9 %. The GDP for the 1980's have been an average of 8 per cent but in 1997, the forecast was for a 7 to 7.6 per cent growth (Sydney Morning Herald 1997: 12. August, 27).

Until the more recent economic downturn and subsequent devaluation of the ringgit, the Malaysian labour market has been described as 'tight', in the sense it had an economy with full employment and a low unemployment rate.

This 'tightness' can be observed through the following indicators

- *Employment turnover* surveys indicate a high rate with anecdotal evidence indicating that employers have, and are experiencing difficulties in filling vacant positions.

- The World Bank (1995) has estimated that between 1987 and 1992, wages for the average Malaysian workers have increased by 46 % compared to those in the manufacturing sector of 55 % during the same period.

The tight labour market indicated a high demand for labour and the factors contributing to this demand were:

- In the 1980's Malaysia restructured its economy and shifted its focus from an agriculture dependent economy to one driven by manufacturing. This shift in policy is evidenced by indicators which show that in the 25 years from 1970 to 1995, the agricultural employment share decreased from 53.2 % to 18.9 % while the manufacturing share increased from 8.7 % to 25.5 %. In the Services sector, employment increased from 32.5 % to 47 % in the same 25 years from 1970.
- A decrease in the unemployment rate from 8.3 % in 1985 to 2.8 % in 1995. This downward trend in unemployment is another indicator of the dramatic economic growth in the late 1980's.
- The quality and quantity of the outflow of international labour migration exceeded the inflow in the 1980's.

Outflow

- In the 7 years from 1983-1990, 40 000 skilled workers left for the USA, Australia, New Zealand and Canada;
- In 1991, it was estimated that 5,000 were in Chinese Taipei, 17,000 in Japan, and many thousands in Australia, New Zealand and USA;
- 50,000 transient workers commute to work from Singapore daily;
- In 1995, it was estimated that 200, 000 permanent residents and commuters flowed into Singapore.

Inflow

In 1993, 61 269 skilled workers and 563,000 semi skilled and unskilled workers migrated to Malaysia. This figure excluded the many thousands of undocumented migrants in Malaysia.

Education and Training

Enrolments in Vocational Education and Training in Malaysia have been extremely low. In 1993, 9.6 % of secondary school students enrolled in vocational education compared to 60 % in Germany, for instance.

In addition, the Malaysian vocational education system is supply oriented and not driven by the demands of industry. There is a mismatch between the needs in industry, and the curriculum of training institutions. In addition, there is a lack of private sector participation and commitment in vocational education and the inflexibility of education institutions in

responding to changing needs of the general community and industry in particular. There is a tendency for Malaysian vocational institutions to train students in skills which are not required by firms. (Pillai 1995:3)

Further, the Malaysian vocational education system has not produced sufficient workers who possess basic skills to be upgraded to meet industry's demand. The inappropriate training of workers is a key issue for the Malaysian education system.

Government Response

The Malaysian Government has recognised and acknowledged the problems. It has taken action to respond to the labour shortages by introducing more Polytechnics and Universities in East Malaysia, and encouraged industry and education links by introducing tax incentive for training for firms with more than 50 employees. The Human Resource Development fund was created to collect the tax and administer the fund. In addition, measures to manage the influx of foreign unskilled labour were introduced in Malaysia but it is unclear whether these will resolve the issue of undocumented workers.

Conclusion

While the brief overview of human resource development issues in three countries does not represent empirical evidence of the HRD for the Asia Pacific, it illustrates the diversity, scope and complexity of capacity building in the region.

The Australian labour market is faced with the issue of how to strike a balance between a training outcome to meet industrial demands for specialised skilled labour and the need to sustain a research infrastructure and culture to sustain innovation for the generation of new industries.

One of the major labour market issues in the People's Republic of China is to articulate strategies to increase the technical and business management skills of its population quickly, and effectively, to take advantage of its growing international business activities within China and outside it. The rapid industrialisation process and the flow of international investment in the PR China accentuate the labour market problems.

In Malaysia, the major human resource issue is articulating the strategies to respond to the severe shortage of technical labour, middle management capability and development of a research culture to meet the dramatic increase in demand for skilled and technically advance workforce to sustain its industrial growth, without international expatriates.

The Pacific Economic Cooperation Council's HRD Outlook, 1996:5 identified 4 major human resource development issues in the Asia Pacific.

1. The need for closer analysis of the link between increased regional trade and its impact on the labour market and social policies;
2. The need to address the continuous imbalances between labour market requirements and the outcomes of educational training institutions noting the demand by industry for flexible response to its labour requirements not only in volume but in relevance and applicability;
3. The need for greater policy and program advice on the most appropriate strategy for education and training reforms;
4. The need to address the links between foreign investment and the transfer of high level manpower skills, and the mechanisms to meet lower level manpower skills by transnationals.

In addition to these 4 major macro economic issues, the following could be introduced:

5. The need to integrate, coordinate and collaborate the diverse, complex and multiple demands of industry with the diverse cultures, languages and values of Asians, their workplaces and environment;
6. The need to integrate industrial education and training demands with the need for reforms in the policies and programs of individual governments;
7. The need for long term planning and investment in the future of vocational education and training relevant to the current human resource development needs of industry.

The HRD issues experienced in three of the economies in the Asia Pacific provide windows to view the scope of labour market issues confronted by governments in the region. However, these human resource development issues apply internationally in different contexts but the solutions are local and regional in perspective.

The HRD issues identified in this paper have echoes and reflections in the Reports on Reforming Upper Secondary Education in Europe, particularly in the Leonardo da Vinci programme edited by Johanna Lasonen (1996:4)

The issues of sustainability, balance between the economic and social responsibilities of the labour market, lifelong learning strategies, embedded in European solutions to the labour market, are not reflected sufficiently in the Asia Pacific. The countries in the Asia Pacific are simultaneously articulating "Asian" solutions to the labour market appropriate to their culture, history and politics but the experience in more mature economies in Europe continues to present models for guidance in articulating fresh strategies to old issues.

This brings together the idea that between the two great regions, Europe and Asia, there are opportunities for cooperation and collaboration in vocational education. It is suggested that:

- Networks of vocational education academics, scholars and practitioners should meet regularly to identify common issues, strategies and ideas on human resources development across the globe. There are currently international bodies such as the International Vocational Education and Training Association (IVETA) which take this role. The profile, status and research capacity of the Association should be increased with a combination of public and private funds to demonstrate the necessity to share vocational education experiences and ideas for increased productivity and livelihood;
- Financial contributions by European, and Asian Governments and private sector towards the generation of vocational education research between the two regions of the globe. The Asia-Europe Meeting (ASEM), where leaders of 24 countries and the Asia Pacific Economic cooperation (APEC) particularly its HRD Working Group could be one vehicle to implement such an initiative.
- At the institutional level, universities, institutes and research centres could initiate collaborative research projects, funded by all partners benefiting in, and resourced by the same group to develop and maintain international links between researchers and institutions on VET.
- International conferences and seminars such as the International Vocational Education and Training Policies Seminar at Jyväskylä and IVETA could be avenues in which the flow of ideas, concepts and strategies in vocational education and training could cross national boundaries and regions.
- A combined website for research in vocational education and training could facilitate the international flow of ideas and knowledge across the web of relationships.

Through creating, building and sustaining webs of research, professional and institutional links across national boundaries at one level and the social and individual relationships which underpin these links, progress can be achieved in developing people to work better, produce more, be better remunerated and perhaps live more satisfactory lives.

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VOCATIONAL EDUCATION AND TRAINING PROJECTS IN DEVELOPING COUNTRIES: ISSUES OF QUALITY AND SUSTAINABILITY

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What factors contribute to the success or failure vocational education and training (VET) development projects? Perhaps no other question is as important to development specialists. The record for development assistance is not good. A study of World Bank assisted educational projects, for example, reports that only about half of the 550 projects reviewed appeared sustainable (World Bank, 1990). A study of 212 educational projects sponsored through the United States Agency for International Development (USAID) showed even less favourable results: approximately 11 % of the projects were judged to be sustainable (Kean, et al. 1988). A recent study of USAID assisted VET projects reached a similar conclusion (Herschbach, Hays and Evans, 1992). Successful VET projects are difficult to implement and sustain in developing countries.

Implementing and sustaining quality vocational education and training (VET) programs presents complex problems to policy makers. Not only are vital financial resources often in short supply, but there are few guidelines for determining which educational interventions have a reasonable probability of being sustained in what can be an uncertain and unstable implementing environment. Moreover, what works in one country context may not work in another. The export of Western concepts of technical training in particular has had limited success in many developing countries (Middleton and Zideman, 1997).

VET development assistance has mainly focused on providing resources. However, over the course of the past decade, the range of project activities has broadened, both at national and donor levels. Project objectives have

become more ambitious as policy makers have realized that there needs to be a shift from building and equipping facilities to system concerns, such as strengthening organizational structures, investing in instructional development, conducting teacher training, and fostering institutional development. Nevertheless, project implementation continues to be conceived mainly as a process of achieving greater technical efficiency in the application and use of resources. But it simply is not enough to pour human and material resources into development projects without also giving studied attention to the complex factors which condition the successful use of resources.

This study suggests that policy makers, planners, and donors need to give much greater attention to understanding the implementing environment, appraising project complexity, and fitting projects to the local context. A framework is presented which provides a way to examine the interdependent relationship between the implementing context and the technical dimensions of VET projects. Crucial contextual and technical conditions are identified and discussed.

Study Framework

Issues of program quality and sustainability are at the forefront of policy concerns (Fuller & Clarke, 1994; Riddell, 1997). This study examines reasons why VET projects succeed or fail in developing countries. First, contextual conditions are examined. These are probably the most important conditions and include political, economic, policy, cultural and environmental factors. Next, technical conditions are identified which are critical for maintaining quality and sustainability. These include factors which relate to project complexity, such as scope of the project, the organizational structure, administrative levels involved, the number of components, and the time frame, among others. A theoretical model is suggested for examining the relationship between technical and contextual conditions.

Conceptual Framework

Although this study is eclectic in its use of data, its basic conceptual framework is informed by contingency theory and the work of Bickerhoff & Goldsmith (1992), Fuller & Clarke (1994), Hofstede (1992), Lawrence & Lorsch (1969), Riddell (1997), and Rondinelli, Middleton & Verspoor (1989), among others. The research focus is on contextual and technical variables that condition successful VET implementation. Contingency theory suggests that while there are good educational practices, there is no single "best" set of practices. Neither a theoretical optimal mix of resource inputs nor a key set

of site-level and classroom management and instructional processes are sufficient to improve quality over the long-term without consideration of the implementing conditions. The successful reconstruction of VET programs and institutions depends on "situational" or "contingency" factors that are specific to the implementing context. Moreover, it is thought that change is best carried out incrementally and only after sufficient experience has been gained and essential management and staff capabilities have been developed.

Procedure and Method

The research involved three steps. First, a review of the international literature on VET was conducted, covering both primary and secondary sources of information (Herschbach, 1997; Herschbach, Hays & Evans, 1992). The literature review revealed a rich body of material on VET in developing countries and provided a framework within which to interpret international donor experience. A second source of information was obtained from the field experience that the United States Agency for International Development (USAID) has built up in the design and implementation of VET projects. The evaluation reports of twenty-four VET projects were examined in order to determine what factors promoted successful implementation or contributed to project failure (Herschbach, Hays & Evans, 1992). The focus was on two major categories of variables: the conditioning factors in the implementing context, and the technical characteristics of VET projects. A model was formulated for examining issues of VET program quality and sustainability, based the relationship between technical and contextual conditions. Third, in-depth field work was conducted in three countries: Jamaica, Honduras and Albania. This provided the opportunity to test the model and to refine its dimensions.

Understanding the Implementing Context

Although VET development specialist have refined procedures for assessing training demand and translating labour force requirements into programming decisions, no comparable attention has been given to assessing the relative requirements for implementing projects or to identifying the conditions which are necessary for successful implementation. It is assumed that the crucial decision is to assess external labour force requirements, and to determine how best these can be addressed through possible VET programming alternatives. Technical interventions in the form of equipment, new curricula, teaching workshops, and support services are identified. Organizational and system changes are proposed. A detailed and com-

prehensive program "blueprint" is drawn up to be followed during project implementation. Little or no systematic consideration, however, is given to examining the dynamic and uncertain aspects surrounding VET programming which are grounded in the implementing context itself, and which are crucial to successful implementation. Little leeway, moreover, often is provided for altering plans once it is determined that the specific country circumstances will not support successful implementation.

The findings of this study suggest that the ability to implement and sustain quality VET projects is conditioned by what can be termed *macro-level factors*, such as the political and economic climate, the social and cultural values, and the legal and bureaucratic structures within the particular country setting. Implementation is also conditioned by *micro-level factors* that relate specifically to training systems. These include the availability of financial resources, the supply of trained personnel, access to instructional resources, supporting organizations, stakeholder groups, and other human and material resources. These can be considered technical elements impacting on project implementation, but they are not under the direct control of the project.

Combined, the macro and micro-level factors constitute the environmental context within which the project is implemented. Planning and decision-making must be based on an understanding of the implementing context, and on an assessment of the likelihood that a particular intervention can be successfully implemented. The implementing context must be supportive in order to successfully implement and sustain a VET project. The failure to adequately identify and accommodate critical contextual conditions can seriously weaken a VET project and impair its sustainability (Nadler & Trashman, 1983; Cohen, Grindle & Walker, 1985; Middleton, Woldermarium & Mayo-Brown, 1986; Rondinelli, Middleton & Verspoor, 1989). Successful project implementation comes through successive adjustments in the project objectives, scope of activities, level of innovation, and duration of support as greater understanding is gained of the crucial contextual conditions governing implementation.

Macro-Level Factors

VET planners have a general familiarity with micro-level conditions, although they are usually not fully considered when making decisions. They do considerably less well in identifying or accommodating macro-level conditions, or, and most important, in recognizing the interdependent relationship between the larger contextual conditions and ability to successfully implement and sustain a quality project. Generally, macro-level factors are not taken into consideration when planning and implementing a VET project. Table 1 identifies representative macro-level conditions.

Table 1. Representative Macro-Level Conditions

CONDITION	PROJECT IMPACT
Political climate	Stable/instable; certainty/uncertainty; clear center of power/diffused; supportive/hostile; democratic/repressive; correct/corrupt; safe/unsafe
Policy environment	Supportive/nonsupportive; contributes to market stability/instability; fosters economic growth/retards growth; stimulates/retards employment; encourages/discourages cooperation; delegates/ asserts control; promotes/ impedes efforts
Economic context	Stable/unstable; adequate/inadequate funding; long-term support available/unavailable; employment growing/ stagnate
Legal and bureaucratic structures	Fully developed/undeveloped; reliable/unreliable; honest/corrupt; efficient/inefficient; stable/ unstable
Social and cultural context	Open/closed to change; individual/shared power and authority; open/rigid social hierarchy; trusting/ suspicious of authority; low/high level of social abuse; acceptance/rejection of foreign influence
Environmental context	Available/unavailable reliable sources of electricity, water, heat; reliable/unreliable communication (telephone, fax, mail, e-mail); good/poor transportation (local and overseas); pleasant/harsh climate; friendly/difficult geography

Macro-level implementing conditions are uneven and changing. Strong political support, for example, may be combined with weak organizational capacity. Or, over time, what were adequate financial resources may be severely reduced, and political support may disappear completely. The impact of macro-level conditions, moreover, may not be constant at all organizational levels. Line agency support, for example, may be strong, but policy guidance weak. Of particular importance is an assessment of the policy environment and economic context.

Policy Environment

The single most important contextual condition that affects the effectiveness of VET interventions is the policy environment (Cohen & Rossmiller 1987; Herschbach, 1994). Unless the policy environment is supportive, quality VET programs cannot be successfully initiated and sustained. The outcome of education and training is inextricably linked to the policy environment.

There are two important ways in which the policy environment impacts on VET. First, public policy must establish the macro-economic conditions that make it possible for employers to benefit from training. Government policy must support the conditions (political, economic, and social) essential for the stability and expansion of enterprise. Otherwise program completers will not be able to find employment. The program will have poor external efficiency.

Tax policies, for example, must favour investment, business expansion, and market stability. Working capital must be available, so that employers can upgrade and expand. Currency regulations must not impede supplies of material, machinery, equipment, and spare parts. Barriers to markets must be removed, especially in the case of small employers. Labour regulations must support staff development, and incentives for investing in training must be present. These conditions determine whether employers seek out and make use of training services, and they affect the relative usefulness of education and training programs (USAID, 1987; Grindle, Mann & Shipton, 1987).

Second, public policy must establish the conditions that support not only the general economic climate but also the ability to provide effective education and training. These conditions influence whether society accepts and supports VET interventions, conditions the kinds of programs that can be implemented and affects the quality and effectiveness of VET programming. Policy priorities, for example, may result in a low level of financial support for VET. Other educational programs may be assigned greater social importance. There may be unfair competition for the control and use of resources, or the hiring and promotion policies of firms may work as training disincentives.

The Economic Context

The economic context is another important environmental condition affecting the implementation of VET programs. First, for most institutional forms of vocational education to succeed there must be an increasing demand for labour in the formal sector (Levin & Lockheed, 1993). Unless the demand for labour is rising, VET completers have few employment possibilities, employers are not interested in collaborating with training providers, and few resources are available for training.

Planners tend to be overly optimistic, often projecting many more job openings in the formal sector than will ever exist. Most estimates on which training is based predict high levels of demand regardless of the long-term economic outlook, thus leading to mistaken decisions and poor use of resources.

Second, the income level of a country affects the success of training interventions. This is one of the most crucial elements to consider in decision making. Without a threshold level of national income, VET programs cannot be successfully implemented and sustained over the long term (Middleton & Demsky, 1988).

The most crucial consideration is the availability of support for recurrent costs. Annual recurrent support, though modest in comparison to capital expenditures, is more important for maintaining programme quality. A major reason for the inability to sustain a project over the long term is the failure to adequately assess and provide for recurrent funding obligations. Donor assistance does not come free. It assumes an obligation in relation to the funding available for recurrent support. What appears at first to be a development asset may be a financial liability when long term recurrent financing obligations are fully considered.

In designing a VET project, planners must fully provide for the amount of recurrent funding needed over the expected life of the project, including the period after donor assistance phase out. The host countries' financial obligation will increase as the donor concludes its assistance and as system and maintenance costs increase. Project size and duration should be based on the ability of the host country to provide the required recurrent funding over the expected life of the VET project. Unless adequate funding is budgeted annually, it is difficult to sustain quality, even when the capital investment is high. If insufficient funds are budgeted for recurrent expenditures, the original investment will likely be lost as equipment, machinery, and buildings deteriorate through a lack of maintenance and the instructional program weakens through a lack of resources (Herschbach, 1993).

Social and Cultural Context

Very little attention usually is given the social and cultural factors surrounding the implementation of VET projects. Technical interventions are assumed to be cultureless, yet the way that they are actually mobilized in the classroom and school is conditioned by the social rules operating within the particular society. Some changes introduced by donor agencies are subverted, some are ignored, and others are allowed to atrophy because assumptions are made about their use and importance that are not shared by the indigenous personnel responsible for implementation. Some interventions simply do not work and there may be little understanding why they are ineffective. Classroom and schools are cultural constructs, and unless local meanings are taken into account, it often is not possible to effectively trans-

mit modern forms of VET that are likely to succeed.

Particularly useful as been recent work examining the internal cultural of schools and classrooms (Fuller & Clarke, 1994; Mehan, 1992; Profet & Rowell, 1993; Rugh, 1992). Understanding how VET programs can be successfully implemented requires understanding the implicit and explicit rules, norms, perceptions and forms of social participation that condition management practices and teaching and learning in schools and training organizations. Greater sensitivity to the social and cultural context makes it possible to more fully explain why certain interventions are effective, and under what conditions interventions can be successfully implemented (Bennett, 1993; Montero-Sieburth, 1992).

The other macro-level factors identified in Table 1 are no less important, but they will not be discussed because of space limitations. In any case, within a given country, an interrelated set of political, policy, social, institutional, environmental, and economic factors which make up the implementing context determines whether or not a particular training intervention can be implemented and successfully sustained. It is crucial to assess conditions in the implementing context before designing training interventions. Just because a certain training alternative appears to be cost-effective does not mean that it can be successfully implemented in a particular country, or, indeed, that it will address a specific development need.

Micro-Level Conditions

Micro-level factors are technical elements which impact on project implementation and sustainability, but they are not within the scope or control of the project. Nevertheless, micro-level factors are instrumental to project success. They condition the ability to successfully implement and sustain a project by contributing to either a supportive or unsupportive implementing environment.

VET projects are conducted within a larger organizational context which establishes the context for program implementation. The associated organizational and system inefficiencies may be a major cause of low-quality and unsustainable VET projects, but yet they do not come under the influence or control of the project. Unless there is a reasonable assessment of the complexity, influence and stability of the larger organizational and system context within which the VET project operates, project implementation can be seriously weakened.

Verspoor (1989) identifies four primary organizational levels associated with education and training:

- a) Policy and planning organizations prepare overall development plans, formulate policy options, establish standards, allocate resources, identify training priorities, and approve curricula.

- b) Support agencies are responsible for the logistical services associated with building facilities, printing textbooks, providing educational technology, equipping laboratories, recruiting teachers, and ordering supplies.
- c) Line agencies serve as the link between the central educational authority and the operating units. They fill mainly a supervisory function.
- d) Operating units provide instructional services. They are the key to the successful delivery of education and training.

In addition to organizations and units which function within ministries of education or labour, there is a relative large number of other groups which either affect or are affected by the VET project. These include, for example, ministries of finance and planning, health, and public works, teacher organizations, employer groups, universities, private schools, worker organizations, parent groups, and political organizations, to mention some of the more important social and governmental entities which help to condition project implementation (Rondinelli, Middleton, & Verspoor, 1989).

The influence of macro and micro-level factors often is overlapping. As Cohen, Grindie and Walker (1985) observe, it is essential for planners to be at least aware of patterns of political influence and how they cut across organizational boundaries. Highly polarization political groups often penetrate bureaucracies. Administrators may be reluctant to make decisions. Decision-making also may be fragmented among agencies.

Middle and Low-Income Countries Contrasted

Differences between middle and low-income countries illustrate the differential effects of the implementing context. Middle-income countries generally enjoy considerably greater potential than low-income countries for implementing and sustaining VET projects of all types. The overall resource level is greater, their economies are more robust, and their management and institutional capabilities are more mature. They are able to develop the organizational and system elements required for the successful implementation of VET projects. The trainee population tends to have a higher educational level; thus, a higher level of training can be offered. More placement opportunities exist for program completers; greater potential exists for linkages with employers; and employers are more willing to support training. These and other conditions make it possible for middle-income countries to offer a range of VET options (Middleton & Demsky, 1988).

In contrast, low-income countries lack the material and human resources to develop strong capacities for project implementation. Administrative

and management support for training projects is generally weak. Training programs are not able to recruit, train, and retain enough proficient managers and instructors to successfully run projects. At the institutional level, program implementation is also weak. It is difficult to recruit and retain qualified teachers because of low salaries; instructional resources are in short supply; curriculum development activities are restricted; and certification and evaluation systems are lacking. There is not capacity to experiment with and adapt programs. The unit costs of instruction tend to be higher than in more affluent countries. Finally, enterprise capacity is underdeveloped, and employment demand is usually weak. Opportunities for collaboration with industry and business are limited, and virtually no possibility exists for financial support from employers (Middleton & Demsky, 1988).

Most donor assisted VET projects are targeted to low-income countries. Project priorities are based on the perceived need for income and employment generation. While low-income countries may have the greatest need for training projects, they have the least capability for implementing such projects. The result is that projects are established but they cannot be sustained. Projects usually exceed the capacity for successful implementation.

Project Complexity

Project complexity directly affects project implementation and sustainability, as well as the choice of what kinds of VET interventions can be developed. The relationship between project complexity and the implementing context is crucial. Complex VET projects require highly supportive conditions to be implemented successfully.

Complexity manifests itself in a number of different ways. At the institutional level, Fullan (1989) observes, "complexity can be defined in terms of (1) the number of components of practice affected, (2) the magnitude of difference from existing practices and beliefs, and (3) the difficulty of learning the new practice (p. 21)." Complexity also depends on whether a project focuses on a specific activity (e.g., building a facility) or encompasses organizational development (e.g., strengthening management). In the former case, the specific activity is of primary concern, and, although the organizational structure is important, it remains in the background. The project tends to be more focused, stable, and amenable to completion within a set time frame. In the latter case, the amount of initial uncertainty is considerable greater; relations are complex and must evolve from the development process; and modifications involve changes in what people do and think.

Table 2. *Representative Factors Contributing to Complexity*

Number of components affected
Magnitude of difference from existing practices and beliefs
Level of difficulty involved
Scope of activity (a specific activity or an organizational change)
Kinds and number of objectives
Size of intervention
Amount of uncertainty
Type of intervention
Administrative and management requirements

As suggested earlier, over the course of the past decades, development projects have become more comprehensive. There has been a shift from mainly providing facilities and equipment to also strengthening organizational and system components. This shift has been necessary in order to improve the quality and sustainability of projects. However, strengthening the way training organizations and systems operate requires a greater emphasis on the development of the dynamic, and less certain projects components, such as human resources. Complex organizational requirements must be addressed, and interventions must be comprehensive and sustained over time. Such interventions are far more complex than physical resources.

Project complexity is also a function of the particular training mode as well as the scope of implementation. Establishing and maintaining training centers, for example, is a complex undertaking. And when implementation occurs on a regional or national scale, the complexity of the project substantially increases because of the sheer number of institutions involved. Similarly, implementing a single employer-based training program is much simpler than addressing the needs of numerous employers. When a training program links public institutions and private firms, the complexity increases still further. In other words, as more organizational levels are involved, the scope and complexity of a given project increases significantly.

The administrative and management requirements of a project vary with its complexity. Less complex projects place demands mainly on the operating unit, such as an individual training institution or placement center. As project complexity increases, major administrative and management requirements extend to line agencies, such as district educational offices; to support agencies, such as curriculum units; and to policy and planning agencies and groups, such as ministries or employer organizations (Ver-

spoor, 1989). The development of sufficient administrative and management capacity for project implementation may call for the development of organizational capacity at each of these levels. Project complexity must be accommodated in project design, and the choice of project activities must be based on an assessment of the implementing capacity.

The relationship between the size and the complexity of a project is direct but not exact. Larger projects tend to be more complex because they involve a greater number of components, span a number of organizational levels, and embrace different and competing groups of individuals. When implementing capacity is lacking, it is crucial to reduce project size. Project size, however, is often determined by an assessment of the particular development "need" or by the desire to demonstrate support for a government or agency; and not necessarily by a full assessment of implementation capacity. Although project planners may examine the technical feasibility of project implementation, they usually do so in a perfunctory manner, undertaking little more than a general review rather than a detailed analysis of existing human and institutional capabilities. Project size and complexity should be based on an assessment of implementation capacity rather than on an assessment of needs, because needs will always exceed implementation capacity.

Given the low level of implementation capacity in many developing countries, donor-assisted projects tend to be too complex. The projects have many objectives, some of which are too complicated or too ambitious to be accomplished given the proposed time frame and the existing resources.

Of the 24 VET projects reviewed in this study, complexity was the major associated cause of failure to successfully implement and sustain quality programs (Herschbach, Hays & Evans, 1992). Given the weak support in the implementing environment, projects were overly ambitious, the duration of donor support too short, and supporting institutional capabilities not sufficiently developed.

In low-income countries, the best policy option is to establish organizationally simple projects, as the management capacity usually is not available to run complex projects, related institutional support is unavailable, necessary resources are lacking, and employment opportunities are limited. In general, the length of VET projects need to be extended. Management capability in particular needs time to mature, and it takes time for the project to become operationally embedded within the existing institutional, economic, political and social framework. It also is good policy to keep funding at a modest level initially and to increase incrementally as experience and success are gained. The tendency to infuse projects with large amounts of funding over a relatively short period of time should be avoided. Funds cannot be used well, institutional distortion occurs, and the essential managerial and organizational structures are not developed sufficiently to sustain project operation.

Relationship Between Context and Complexity

The relationship between the implementing context and project complexity is critical, for it determines the degree to which projects can be successfully implemented. Complex projects have complex management requirements, and if the requirements far exceed the existing management capacity, there is little chance that project implementation will succeed. In that case, project design and scope must be altered.

As the project design becomes more complex, understanding and accommodating the relationship between the implementing context and project complexity becomes more crucial. Figure 1 and the accompanying discussion describe this relationship.

		COMPLEXITY OF DESIGN	
		LOW	HIGH
LEVEL OF IMPLEMENTING SUPPORT	LOW	A	B
	HIGH	C	D

Figure 1. Project Outcome as a Function of Support and Design

Low Support/Low Complexity

Under conditions of low support and complexity (A), the most likely project outcome is moderate success in the initial implementation phase, and the strong probability that the project will not be sustained after donor support is concluded. Because complexity is low, the project can be implemented successfully with the support and backing of the donor agency. But once this backing is withdrawn, the implementing environment is too weak for the project to survive on its own.

Under these conditions, the most prudent policy option is a "permanent pilot" program (Verspoor, 1989; 1992). Initial funding is modest, and the donor expects to remain involved for a considerable time. The donor cannot withdraw completely because the project would collapse. As long as the project is sustained by the donor, activities should not be expanded on a national scale.

The major benefit of the permanent pilot approach is that it allows for the introduction of a potentially useful innovation, thus demonstrating the possibility of change. The donor maintains its presence, while a small but effective cadre is trained and successful change demonstrated. At the same time, a more favourable implementing context can be cultivated. If this is achieved, then the project could move to incremental expansion.

Low Support/High Complexity

Complex projects should not be designed under conditions of low support (B) because of the high likelihood of eventual failure. An implementing environment that is already weak will be further stressed by the requirements posed by a complex project.

Because of perceived need, large and complex projects are often designed for countries with low implementing capacity. Most donor assisted projects fall into this category. The result usually is failure during implementation. When project design is based on identified need rather than on an analysis of implementing capacity, this is the most likely outcome. The best policy option is to avoid complex projects in favour of relatively simple projects with modest management requirements and sustained donor assistance.

High Support/Low Complexity

A scenario of high support and low complexity (D) offers the most promising set of conditions for successful project implementation. Interventions can be carried out over a relatively short period of time. Modest programs can be sequentially expanded with a high probability of success as long as complexity does not increase and support does not diminish.

Training projects conducted by private voluntary organizations have tended to be successful. They also tend to fit into this category. In general, these organizations have strong management structures and are highly committed to their target populations. The success rate of project implementation with private voluntary organizations is high due to the modest scale of activities and the strong support provided by the implementing agency.

High Support/High Complexity

Under conditions of high support and high complexity (D), success is likely only if the true complexity of project implementation is fully considered. Although support may be high, a training system's capacity to absorb rapid and complex change may be limited. Even under the best of conditions, institutions cannot absorb change faster than their ability to develop the required implementing structures.

A strategy of incremental expansion, in which a complex innovation is adopted in stages, ensures a high probability of success. Initial project goals are modest; considerable experimentation occurs with ongoing monitoring, assessment, and correction; and large-scale expansion occurs only the implementing organizations have demonstrated the capacity to perform. A relatively long period of time should be allowed for this process, with the final objective being comprehensive, large-scale implementation of the VET program.

Discussion

The primary finding was that the relationship between the implementing context, project complexity, and technical elements is of considerable importance. As project design becomes more complex, understanding and accommodating this relationship becomes even more crucial. The projects most likely to succeed are those with a high level of implementing support and a low design complexity.

Donor agencies, in general, have yet to solve the problem of sustaining VET projects (Kean, et al. 1998; Middleton & Zideman, 1997; World Bank, 1990). This study suggests that the most serious problems are achieving program quality and sustainability, and that the most critical challenge is working effectively within the complexes of the implementing context. The particular training mode is not as important to success as the combination of social, economic, political, social and institutional conditions that will foster program stability, efficient use resources, long-term development, and effective links with employers.

External and internal efficiency are linked through the interdependent relationship of implementing context and project complexity. If project requirements far exceed the implementing capacity, there is little likelihood that quality VET programs of any type can be implemented or sustained. The projects most likely to succeed are those with high implementing support and low design complexity. Projects with high support and high complexity may succeed if a strategy of incremental expansion is followed. Conditions of low support and high complexity may succeed should be

avoided. The most likely outcome is poor training quality and lack of sustainability. In the case of low support and low complexity, the best strategy is to implement a "permanent pilot" project.

The findings of this study also suggest that the planning process itself needs to accommodate the relationship between the implementing context and project complexity. Project planning must give major consideration to the implementing environment, project complexity and fitting the project to the local context. Planners need to engage in what Davis (1991) refers to as adaptive planning, a planning process that involves local participation, accommodates institutional, political, social and cultural factors, and promotes flexible implementation. This study suggests that there is neither a theoretical optimal mix of resource inputs nor a key set of site-level and classroom management and instructional process that will ensure successful implementation and sustainability. But there are ways of going about project design and implementation that will give greater attention to the local context and promote better implementation. Adaptive planning is one way.

The most important determinant of project design should be implementation capacity. Project size and complexity should not be based on needs assessments, but rather on implementing capacity. Most developing countries have great needs but limited implementing capacity. Implementing capacity usually cannot be developed currently with project implementation.

It is difficult to implement and sustain VET projects of all types successfully in low-income countries. Resources are scarce, and management capacity is generally weak. As suggested, the best policy option may be to design administratively simple projects to be funded over an extended period. Donor-assisted projects often have been too complex to be successfully implemented in many of the countries for which they were targeted. Given the complexity of the projects and the conditions under which they must be implemented, project time spans have been too short and the demand on local resources too great.

Successful VET projects tend to follow a pattern of incremental development. Initial investments are small; considerable experimentation takes place; expansion occurs only after sufficient experience and success have been gained. It is essential that project expansion not take place until adequate management and staff capabilities exist, and a system capable of being sustained has been established.

Donor support probably should be sustained over a relatively long period of time. This is particularly important under poor implementing conditions. Introducing change into contexts that are poorly understood is difficult; sustaining projects that have overextended existing implementing capability is impossible; and providing effective training is unlikely if system components do not work well. Time is needed for institutional and

management capabilities to mature, and for projects to become operationally embedded within contexts that are not yet highly supportive. Project cycles of a decade should be considered, and even longer cycles may be appropriate. The majority of successful VET systems have been developed over a fifteen- to twenty-year period. The "permanent pilot" may be one of the best implementing options.

Issues of project quality and sustainability will continue to occupy planners and decision-makers. The challenge faced is to sufficiently broaden the analysis and planning to accurately access the level of support from the implementing context and the degree of complexity in the project design. Only then will implementation begin to approximate the level of success expected within the development community.

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FUTURE OUTLOOK

NEW ROLES FOR VOCATIONAL EDUCATION AND TRAINING

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Introduction

Education is society's means of communicating and holding what is felt to be of particular value. It is also the means of preparing for the new, the unexpected, the unintended, the unpredictable. In that vision, the educated person is not the one who has achieved a particular standard but rather the person who is committed to learning as a part of life. Three initiatives are under consideration in UNESCO. It has undertaken, first, a Review of Secondary Education recommended by the Delors Report and further commended by the Asia-Pacific Conference on Education for the Twenty-First Century in Melbourne. It will be a co-operative endeavour involving the major international agencies concerned with education, including UNDP, UNICEF, the World Bank and OECD. The review will be a substantial endeavour through revisiting of the purposes of education for the secondary-education age-group, in the light of both global trends and local cultures. The Review, while centred in UNESCO, will need to draw on the best information and research available. A second initiative involves case studies of reform in various countries and institutions intended to provide information on innovations, with their reasons for success and failure. UNESCO, with its world-wide contacts is in a unique position to supply information and provide opportunities for connections and visits between centres with mutual interests. A third initiative will be the gathering to-

gether of research relevant to the area and to the process of reform. In this task UNESCO will again be greatly assisted through co-operation with the major international bodies which have parallel interests and have built up their own knowledge and networks. Other globally fundamental issues of reforms are related to the curriculum, world citizenship, teachers, teaching and learning, teaching and technology, and changes in teaching and learning. These and other patterns for school improvement have persuasive arguments to back them but they lack a strong research validation.

The Changing Society

Some changes in education come from internal considerations, for example from seeking further efficiency. The changes which dominate our attention now come from external considerations. As the world changes, we are faced with new demands at work, new technological possibilities, new challenges for living together harmoniously, new issues as people seek to make personal choices for their lives.

For those involved in research, as well as for those involved in the sharp realities of reform, an understanding of the complexities of our society is necessary. So, too, is a feeling for the world we are trying to create.

The UNESCO Constitution was proclaimed in 1945 just a few months after the end of a world war, as nations combined to seek better ways to shape their future. Beginning with the declaration that "it is in the minds of men that the defences of peace must be constructed", the Constitution defines the purpose of the Organisation as encouraging

peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world without distinction of race, sex, language or religion (UNESCO, 1945).

This UNESCO commitment to peace and security has remained unchanged ever since. However, in another sense the Constitution demands from the Organisation a willingness to engage in continual re-thinking as the world scene develops entirely new challenges, opportunities and problems. The changes in the past decade have foregrounded the continuing relevance of the UNESCO Constitution and of the Declaration of Human Rights. It is impossible to fulfil the Constitution or to make the Declaration a reality without making an effective education available to all. The Declaration proclaimed that "everyone has a right to education" and that education is to be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms (UN, 1950, Article 26).

Such education, to be effective, requires a reformed and revitalised secondary education. As the title of this paper indicates, secondary education acts as a bridge; a bridge to work, to further education, to social participation, to personal autonomy. All these needs imply the necessity of lifelong learning as the builder of capacity for an effective role in our society.

The changes in modern society which are particularly relevant for education have brought with them much uneasiness. This is a deep uneasiness, as old certainties are clouded and new ones do not yet appear. The loss of old certainties is as threatening as the developing uncertainties. That feeling of uncompleted change is still with us.

The Czech playwright and current President, Vaclav Havel, expressed this well.

Today, many things suggest we are going through a transitional period when it seems that something is on the way out and something else is painfully being born. It is as if something were crumbling, decaying and exhausting itself, while something else, still indistinct, were arising from the rubble.

He linked this feeling with a new achievement of technology.

This is the first civilisation in the history of the human race that spans the entire globe and firmly binds together all human societies, submitting them to a common global destiny. It was this science that enabled man, for the first time, to see Earth from space with his own eyes, that is, to see it as another star in the sky. (Havel, 1994)

His comments are significant. Not only are we the first human generation to see ourselves from outside. This is merely a symbol that we have become a global society: many people of different backgrounds and interests but subject to "a common global destiny."

The links he makes are significant. It is social change which brings out the sense of uneasiness, the desire for a more stable and certain world. Havel is saying that this social change is secondary, that the dynamic for change is technological. As we examine the changing aspects of our society we can see that this is true, that we are part of a major current in history.

Consider three examples, population change, occupational change and technological development. The world population was a mere 10 million in 5000 BC, rising to 1 billion by 1750, after almost 7,000 years. In the next 200 years, the population rose to 2 billion and in the next 50 years, up to our own time, the numbers trebled, to the current 6 billion. It is the acceleration of this change that is striking.

People's work patterns have shown the same accelerated change. For a long period, more than 50,000 years, humanity was a small, scattered society of hunter-gatherers. The essential occupations were hunting, tool-making, food-gathering, creating shelter and personal care. Work and training for work were indivisible, both carried out in small groups, develop-

ing a specific and stable set of skills. Most people were prepared for all aspects of work, generalists rather than specialists. Work was the requirement for survival and thus was highly meaningful.

For the next period of about 7,000 years, given the technological capacity to produce crops, agriculture was the dominant occupation. As with hunting, work was still generalist in character, but more diverse and requiring more skills and longer training. Work was still directly meaningful, determining plenty or scarcity and, while centred on the home, could involve many sites. Whole families were involved in work and were the locus of training. Other dependent occupations began to arise, trading, transport, banking, clerical work, defence and security, arts and crafts. For some of these, specialised training was involved. The 200 years from 1750 have been described as the Industrial Revolution because of the heightened pace of change, caused almost entirely by human inventiveness. The development of transport and mass production of goods were both the symptoms and causes of this revolution. The tasks of the assembly-line worker were routine, repetitive and specialised, usually with each worker performing one small task and not seeing the final product. The looked-for result was a pay packet rather than food or directly useful products. The inventiveness of a few people led to reduced opportunities for creativity and learning for the many. Mass production led to massive urbanisation. Education and training also became mass exercises, based for the first time on universal primary education, delivered in a factory-like setting. The occupational pattern of the pyramid of unskilled, skilled and managerial work was paralleled by the pyramidal pattern of primary education for all, secondary education for a selected few and higher education for an elite.

The "second industrial revolution" or "human resources revolution" (Kravetz, 1990) has been much more rapid, lasting less than 50 years. Technology is again the key to change, with information technology dramatically increasing productivity so that jobs were lost in heavy industry and gained in service and information industries. That pace of occupational change continues.

The same acceleration is obvious as we look at the way in which new ideas become practical realities. For the camera, there were 112 years between the idea and its implementation. For the radio, that gap shrunk to 56 years. For nuclear fission, 6 years elapsed between the scientific paper and the Hiroshima bomb. For the micro-chip that period was only 6 months. This increased rapidity of application has particular implications for education.

It is not too dramatic to call this a revolution. But here the revolutionaries are not warriors or politicians but technologists. The results of their imagination are changing our world. And they are changing it in unpredictable ways. The technologists cannot predict beforehand what

the outcomes of their work will be. The following quotes from specialists in particular fields show the difficulty. This failure to see ahead concerns the technological aspects, the side of things most open to prediction by the technologists.

This 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us. (Western Union, Internal Memo, 1887).

I think there is a world market for maybe five computers (Thomas Watson, Chairman of IBM, 1943).

There is no reason for any individuals to have a computer in their home (Ken Olsen, President & Chairman of Digital Equipment Corp, 1977).

In terms of the social implications, it is the unintended consequences that are most striking. If we think of the car or television, they have transformed society in ways quite different from their developers' intentions. In some regards, the consequences of change are even more disturbing. There are events where unthinkable results have followed from the wrong use of technology: the gas oven at Auschwitz, the rapid-fire guns for "ethnic cleansing" in Bosnia or motiveless murders in US high schools.

This is the nature of the revolution with which education must help us to deal. It has delivered enormous powers - for good or ill. The choices are multiplied: in number and in impact. But they still remain our choices. Is this something where education can play a part? In which ways does this global revolution alter the agenda of education: In its scope? In its purposes? In its process?

The Knowledge Society

There are many things we cannot say with confidence about our future society. Yet a reflective observation of the past and the present does give us important indications. A major part of current change is its impact on the nature of work. Table 1 indicates some of the likely characteristics of what is known as post-industrial society.

Table 1. *Post-Industrial Society*

Post-industrial society involves:

- a new global economic order;
- the decline of the manufacturing sector, and growth in the service sector, especially in information services;
- a continuing decrease in the availability of employment, leading to:
- a pool of the unemployed;

OR

- some redistribution of employment;
- a rapid change in technology, requiring:
- a continual updating of knowledge

AND

- a continual renewal of social institutions.

In this post-industrial society, as Drucker has pointed out, knowledge plays a key role.

The acquisition and distribution of formal knowledge will come to occupy the place in the politics of the knowledge society that the acquisition and distribution of property and income have occupied in the age of capitalism (Drucker, 1995).

A society in which knowledge is the major resource is very different from the past societies, where money or material products were the valued items. Knowledge is to some extent a storable resource; on paper, on tape, on film, or on disc. In its most precious form, it resides in human minds: as memories, as impressions, as information, as concepts, as understandings, as capacities. In this form, it is not transferable without the consent of its possessor. It is precious but difficult to contain. It cannot be put in a bank, or a safe or a filing system. Access to such knowledge depends on the willing assent of the person.

It is also likely to be limited. Knowledge is increasingly specialised. The omnipotent surgeon is omnipotent no longer: the surgeon needs the physician, the anaesthetist, the pathologist, the theatre nurse, the ward nurse, the machine operators, the lab technicians, the therapists – these and others compose the team on which the surgeon's specialised skills depend. The universal knowledge of a Leonardo da Vinci was rare in his own times – it is now much more so. As in surgery so in teaching, where the application of knowledge involves the linking together of specialised knowledge bases in a planned manner, through teams specially devoted to the purpose. Any large-scale application of knowledge involves the work of many teams, in a school as much as in a hospital. The knowledge

society thus has a greater need of organisation, the planned co-ordination of teams. The manner in which this is done is of crucial importance. This is where we come to the nature of education. Are there particular implications for organisations and processes which have as their core business the promotion of learning?

Now, in Finland and elsewhere, those communities of need are no longer geographic. They must be created. Our global society with its world-wide connections is also looking to establish supportive local environments, with enough meaningful consensus to provide harmony as well as sustenance. In the past we lived in mostly self-sufficient communities. They were communities which could provide the essentials of food, shelter and protection: communities of need. We are seeing in Rwanda, in Bosnia, in Serbia and elsewhere extreme examples of this search, as groups form together on the basis of ethnic background, not only to support one another but to exclude others. Negative as these particular forms of community may be, they represent a need which is more general, as pointed out by Robert Reich:

We are living through a transformation that will rearrange the politics and economics of the coming century. There will be no national products or technologies, no national corporations, no national industries. There will be no national economies, at least as we have come to understand that concept. All that will remain rooted within national borders are the people who comprise a nation. Each nation's primary assets will be its citizens' skills and insights. Each nation's primary task will be to cope with the centrifugal forces of the global economy which tear at the ties binding citizens together – bestowing ever greater wealth on the most skilled and insightful, while consigning the less skilled to a declining standard of living. (Reich, 1992, p. 72)

Reich sees the global society, not merely as neutral to the sense of community, but as actively disrupting that sense. We can see that tension between nations, in the so-called North-South or First World-Third World divide, the gap that exists between the developed and the less developed countries. Within countries, the tension still exists as technological progress, with all its benefits, affects different groups very unequally.

In this situation, globally, nationally and locally, we seek an education which can help build the consensus of which Reich speaks, in other words an education that can create community. But – a special sort of community. A community which supports and enhances its members, providing both care and challenge, but without engendering hostility to others.

Education as a Bridge Builder

Education is society's means of communicating and holding to what is felt to be of particular value. It is also the means of preparing for the new, the unexpected, the unintended, the unpredictable. For those purposes, the central focus of schools is on learning. Our new society has created a new vision of education, not as a stage to complete but as a process to continue. In that vision, the educated person is not one who has achieved a particular standard but rather one who is committed to learning as a part of life.

A good education is one which embodies those concepts and builds a community to enhance them. Recent research shows the benefits of such an approach. (MacMullen, 1996) It identifies two key aspects of improved learning. One is the necessity for an unremitting emphasis on learning as being the central task of schools, a task to which all other characteristics are directed. The other is the need for the development of a sense of community, as the background against which such learning occurs. That concept requires shared values, an agreed common agenda and an ethos of caring.

The issue of education as a means of individual and of peaceful social development is taken so seriously that it is an issue for international agencies, such as UNESCO. Given the global nature of the issues facing education there is a strong case for national systems and international agencies to co-operate in such an endeavour. Three initiatives are under consideration.

A World-wide Review

UNESCO has undertaken a Review of Secondary Education recommended by the Delors Report and further commended by the Asia-Pacific Conference on Education for the Twenty-First Century in Melbourne. It will be a co-operative endeavour involving the major international agencies concerned with education, including UNDP, UNICEF, the World Bank and OECD. Thus the review will be a substantial endeavour, based on careful study and wide discussion as it has the potential to make a global contribution to policy and practice in secondary education. This does not mean a monolithic pattern but a thorough revisiting of the purposes of education for this age group, in the light of both global trends and local cultures.

The Review, while centred on UNESCO, will need to draw on the best information and research available. A suitable start will be to assemble the necessary information to guide the extensive discussions which will be required while still leaving key decisions to the individual countries.

Case Studies of Reform

A second initiative involves case studies of reform in various countries and institutions intended to provide information on various innovations, with their reasons for success and failure. Given that we can rarely take a pattern directly from one setting to another, we can learn greatly from detailed studies of what is happening and how and why the results emerge as they do. UNESCO, with its world-wide contacts, is in a unique position to supply information and provide opportunities for connections and visits between centres with mutual interests. From the reports made to UNESCO a variety of examples can be drawn. In Asia, there is already a reservoir of experience which can be drawn upon. Countries such as China, Singapore, Malaysia, Thailand and the Special Administrative Region of Hong Kong all offer examples whose study would be illuminating. There is much discussion as to what factors are universal in application and which are culturally bound. Without genuine exchange, such views are untested and of limited value.

Research on Reform

A third initiative will be the gathering together of research relevant to the field and to the process of reform. Such sources include bodies such as ACEID, the Asia-Pacific Centre of Educational Innovation for Development, a network of 200 major institutions in 60 countries throughout the region and one which can harness substantial resources. In this task UNESCO will again be greatly assisted through co-operation with the major international bodies which have parallel interests and have built up their own knowledge bases and networks. Taken together, even in terms only of what already exists, these constitute an enormous resource. Given what continued effort can provide and the power of information technology to make interconnections, this resource will be even further enhanced. Research and the exchange of information on experiences has never been more important. There are many patterns of change being adopted in the search for reform. These include such concepts as:

- decentralisation of decision-making
- community participation in the operation and/or policy of schools;
- re-engineering, that is, reconsidering the whole process of schooling;
- the implications of different organisational patterns;
- the learning characteristics of groups of different sizes and compositions;
- implications of school size;
- the effects of different patterns of school-community interaction;

- the evaluation-curriculum interaction;
- school quality.

These and other patterns for school improvement have persuasive arguments to back them but lack a strong research validation.

Other Initiatives

In addition to what might be done through collaboration internationally, there are fundamental issues of concern to us all.

The Curriculum

One of them will be the effort, in every nation, to develop a secondary education curriculum which meets both social and personal needs.

Michael Barber comments on this need:

.... perhaps for the first time in educational history, it is possible to arrive at a curriculum that satisfies this dual need magnificently. The economy and democratic society demand increasing levels of educational achievement from everyone, while the multiple threats to the continued existence of the planet give that drive the ultimate justification. The agenda for education, therefore, could hardly be more motivating. Meanwhile, information technology will provide new and exciting ways of teaching and learning. Moreover, we have, at last, a theoretical understanding of children and young people that will assist teachers in their task. (Barber, 1996)

As mentioned above, to do this task effectively requires a more active approach, a more explicitly values-oriented approach than schools have customarily used. The concept of a learning community offers quite new opportunities. Two separate trends are of value here and seem to offer a promise of synergy, given sufficient creativity and good will. One trend is the wish of young people to be involved in constructive and worthwhile activities, such as environmental conservation or service to others. There is a strong, idealistic approach by many young people to many public issues such as the environment, help to the deprived, service to the community. The second trend is the interest of many countries, as mentioned, in developing citizenship as a means of improving the harmony and coherence of their societies. Citizenship that contributes to such purposes involves much more than teaching about history or institutions or respect for others, although these aspects are helpful. It involves creating a culture of commitment to the community, of service and helpfulness. Young people could, in the same set of activities, carry out useful tasks of value to the environment or of service to the elderly or infirm, gain valuable experience and knowledge and contribute personally to the development of a community culture.

World Citizenship

The concept of world citizenship is a vital aspect of the growing interest in citizenship as a concept with which to build healthy societies. It is now impractical in the extreme to think that peaceful societies can be built in isolation. The relationship with others is as important beyond national borders as it is within them. A vital interest of UNESCO as of the whole UN system is the promotion of peace and the development of harmonious and constructive international relations. These are purposes to which young people can be deeply committed and for which valuable networks can be constructed. It will be important for the success of this work that existing organisations and institutions are fully involved.

Teachers, Teaching and Learning

There is no more important area for attention than the people who will be the major means through which any reform will be delivered. Yet the setting in which teachers and students work and the patterns for that work have not changed fundamentally since the introduction of mass schooling with its adoption of an assembly-line approach to the organisation of schools. That industrial model has never been appropriate for schools and is now no longer felt to be so even for industry, whose patterns of operation and organisation have changed fundamentally with the use of technology. Technology is not the main reason for changes in schools, but it can provide significant help to approaches which are based on the need for more effective learning and which are prepared to adopt quite new patterns of organisation.

Many countries are considering the formation of a Teachers' Council to initiate and supervise the concept of professionalism. Given the key rôle that teachers play in the reform process, they require strong support for the task. The wider recognition of standards of capability and of ethics could enhance both the quality and the status of teachers. When so many people presently teaching are inadequately prepared for the task, even by current accepted standards, it may seem reckless to embark on a course which will involve a more exacting preparation and a more coherent continuing education. An improvement of the status of teachers, however, is a necessary accompaniment to the achievement of better education. Pre-service and continuing professional development provisions are central to this achievement.

Teaching and Technology

Considerable hope is invested in the concept that technology will open up new horizons of opportunity: in reaching the distant or isolated; in mak-

ing links between specialists and learners; in providing unequalled access to information; in producing a whole new range of learning media and opportunities. Technology can deliver possibilities; however, personal interaction is required to realise those possibilities. At the moment the introduction of technology into schools is very uneven, threatening further the opportunities of the disadvantaged, between nations and within nations. The process also usually concentrates on the hardware policies, neglecting the necessary involvement and preparation of teachers.

Changes in Teaching and Learning

The new technology and the availability of more information means an extra, rather than a diminished, demand for high-quality teaching. Further, new approaches to the concept of intelligence open up new ways of learning and pose new challenges to teaching. Of all the world resources available for the future, the largest untapped area is in human abilities. Neurological studies confirm that, in all people, most of the brain cells remain undeveloped. Other studies begin to offer hope that we may learn to recognise and develop a wider range of human abilities. H. Gardner, for example, has identified eight areas of human intelligence:

linguistic intelligence; logical-mathematical intelligence; spatial intelligence; musical intelligence; body-kinesthetic intelligence; interpersonal intelligence; intra-personal intelligence; and naturalistic intelligence ... In my view the purpose of school should be to develop intelligences and to help people reach vocational and avocational goals that are appropriate to their particular spectrum of intelligences. People who are helped to do so will, I believe, feel more engaged and competent, and are therefore more inclined to serve society in a constructive way. This view leads to the notion of an individual-centred school, one geared to optimal understanding and development of each student's cognitive profile. (H. Gardner, 1997)

Whether or not we accept Gardner's educational prescription, the concept of multiple abilities in each person awaiting development is educationally rich. Gardner's approach opens up quite new possibilities in teaching strategies as well as in the purposes of teaching. It is clear that future initiatives will have to recognise the value of developing a wider range of human capacities at a time when our need is so great for imaginative approaches to solving endemic problems.

Sometimes we find the challenge of fundamental reform too intense. The words of John Gardner are relevant here, speaking to the hope and resilience in each one of us.

I know that there is in each of you a flame that will not go out. I know that sometimes it burns low, that at times it is almost smoth-

ered by weariness and defeat – but I know it springs back to life. I know that each of you has more power to do good than you have ever used, more faithfulness than has ever been asked of you, more strength than has ever been tested, more to give than you have ever given. (J. Gardner, 1984)

The summary of the recommendations, that were indicated at the *Second International Congress on Technical and Vocational Education* (Lifelong learning and training: a bridge to the future in Seoul on 26–30 April 1999) will be introduced and discussed in the following section.

Technical and Vocational Training: A Vision for the Twenty-First Century

The twenty-first century will be an era of knowledge, information and communication. Globalization and the revolution in information and communication technology require a new human-centred development paradigm encompassing a culture of peace, environmentally sound sustainable development, social cohesion and international citizenship. As an integral component of life-long learning, TVE has a crucial tool to play as an effective tool to realize these objectives.

The recommendations cover the changing demands of the 21st century as challenges to TVE. TVE systems must adapt to a radically different society characterised by globalization, constant technological and social change and a revolution in information and communication technology. The implications of the knowledge-based society that is emerging include the increased mobility of labour and capital, uneven impacts upon rich and poor, emerging market economies and rural and industrial economies.

The new development paradigm introduced in the Preamble is redefined more sharply as having a culture of peace and environmentally sound sustainable development as its central features. The new paradigm must be adopted as the foundation of TVE, entailing inclusiveness and wider access, a shift to human developmental needs and empowerment for effective participation in the world of work. The focus of education and training must be on the needs and potential of the individual in society. A new holistic approach to education is required. The ultimate goal is the creation of a learning society.

Accordingly, TVE must be made more flexible, innovative and productive. It must impart the required skills, respond to the changes taking place on labour markets and train and re-train the employed, unemployed and marginalized. The objective is equality of opportunity both in the formal and informal sector of the economy.

A new partnership and synergy is needed between education and the world of work. In individual countries the required changes should be introduced in a manner suitable to each country so as to empower and engage human beings in the context of the new paradigm, with TVE as a common key focus of the reform process.

Reforming TVE on the basis of the new paradigm requires among other things appropriate social values and attitudes, adoption of the new technologies, making new policy and financial commitments and paying attention to local, regional and global opportunities and concerns.

The themes cover improving systems of lifelong education and training. As an integral part of lifelong learning, TVE should be designed as a developmental life experience with not only an economic dimension but also cultural and environmental aspects. TVE systems need to be open, flexible, and learner-oriented and must give individuals not only job-specific knowledge and skills but also a more general preparation for life and the world of work. TVE is for personal social and economic benefit.

TVE must be based on a learning culture, shared by individuals, industry, different economic sectors and the government, where individuals are given increasing responsibility for their own knowledge-management and individual learning, while public and private providers ensure programmes that facilitate access to and through the pathways of lifelong learning. An important role of TVE is reducing levels of anxiety caused by constant uncertainty through the provision of knowledge, skills and competencies.

All nations require a coherent education policy and co-ordinated education systems within which TVE must be a fundamental part. It needs close interfaces with the all other education sectors, particularly with general/academic schools and with universities so as to provide seamless pathways for learners. The emphasis must be on articulation, accreditation and recognition of prior learning. Here the responsibility of TVE is ensuring a sound initial education and training aimed at learning to learn.

Perhaps the biggest challenge is coordinating the needs of general and vocational education. While there will be different approaches to coordination in different countries, it is clear that the demands of the 21st century require new synergies between general and vocational education.

Young people should be enabled to shape change, prepared for citizenship, self-reliance and given a positive attitude to innovation. TVE is particularly important in ensuring a seamless transition from the school to the workplace. This presupposes a holistic approach capturing the dichotomies of the academic and the vocational, knowing and doing, the use of the head and the hand, theories and their application. This again requires effective partnerships with general/academic schools and with working life.

A vital role of TVE is reaching the informal sector and providing also the less privileged access to continuous learning. And equally important target are those who drop out of formal education.

A list of urgent considerations that must be addressed to achieve the reforms of TVE outlined:

- the status and prestige of TVE must be enhanced;
- more effective interrelationships are needed between the various sectors of education;
- programmes and curricula must be flexible to facilitate movement through lifelong learning and provide continuous entry, exit and re-entry points both in educational institutions and in other venues accessible to the population at large;
- career guidance and counselling, utmost importance for all clients of the education and training systems, should be significantly strengthened and extended in a number of respects, such as preparing students and adults for frequent career change;
- all stakeholders, particularly industry and educationalists, must be involved in new TVE partnerships;
- the high costs of many TVE programmes must be addressed by incorporating more workplace learning;
- the lifelong learning continuum is best sustained through a diversity of funding, providers and delivery mechanisms;
- quality assurance is essential to ensure TVE a higher status;
- we need to understand more about the critical moments of choice in various stages of life-long learning.

The recommendations encompass the innovations that the challenges facing the learner of the 21st century demand in the education and training process. Most clearly, there is a need for a reoriented curriculum to take account of new subjects and issues of importance. Given the rapid pace of change, there is also the prospect of a virtual curriculum preparing learners to cope with the obsolescence of their knowledge and skills and with new elements which have yet to emerge. They must also be prepared for a labour market where traditional wage-employment may be rare and various forms of self-employment offer the best change of economic independence.

The new information technology has opened up a whole new potential in technology-based learning. A synthesis should be possible between technologies of various levels of sophistication and the valuable aspects of traditional teaching methods. Technology-based learning should play a crucial role in the development of a new learning culture where learners are provided with multiple new pathways to education and training.

The new technologies must be used to provide widespread access to TVE by making distance irrelevant and offering flexibility in time and location of TVE delivery. This should also enable TVE to function as a catalyst for the introduction of new technologies in underdeveloped regions, particularly in rural areas.

As the workplace calls for more sophisticated skills, a sound basic education is now a prerequisite foundation for TVE. More complex competencies should be acquired at school.

Partnerships with industry, financial and aid agencies and regional and international cooperation are needed especially in developing countries to address the high price of technology. New ways must also be found to share intellectual property for the benefit of learners.

Teachers continue to play a paramount role. New methods must be found for their initial training and their competencies must be constantly upgraded and their professional development must be promoted. The qualifications of TVE teachers must be rethought, including finding an optimum balance between institutional and workplace-based training.

Industry, governments and research centres must cooperate on identifying the knowledge, skills and competencies required by changes in the economy so that TVE systems can prepare for them.

The recommendations attempt to create a TVE for all. TVE is characterised as one of the most powerful instruments for enabling members of the community to face new challenges and to find their roles as productive members of society. It is an effective tool to achieve social cohesion, integration and self-esteem.

TVE programmes should be designed as comprehensive and inclusive systems to accommodate the needs of all learners. Special efforts are needed to reach previously marginalized groups so as to ensure them access to lifelong learning. Both formal and non-formal TVE programmes must be made accessible to marginalized groups.

The underrepresentation of women in TVE is of particular concern. Traditional perceptions of gender roles in the workplace should be challenged. The Congress suggests TVE programmes gender-inclusive both in delivery and content, ensuring competent and gender-sensitive faculty, more effective forms of educational and vocational guidance along with gender-sensitive guidance and counselling materials and learning and working environments better adapted for the participation of girls and women. Overt and covert bias and discrimination must be removed and a positive image and appropriate incentives for female participation in TVE created.

To overcome girls and women's lack of employment opportunities and there are misconceptions about their ability to perform particular tasks should be overcome through programmes emphasising the development of their entrepreneurial capacity.

The disabled are another educationally marginalized group whose aspirations and achievements must be broadened. The obstacles in their way include underestimation of their ability and potential to take up competitive paid employment. They should be assisted to join mainstream programmes or provided with special programmes and learning strategies to realize their potential and optimize their social and workforce participation.

TVE for all requires well-designed policies and strategies, increased resources, flexible and appropriate delivery modes, friendly training environments, sensitive and caring teachers and employers.

A discussion of the changing roles of governments and other TVE stakeholders is compassed. In a modern market economy governments carry a primary responsibility for TVE, but policy design and delivery require a new partnership of industry, government and society that creates a coherent legislative framework to enable a national strategy for change. Apart from the actual provision of TVE, governments may give leadership and vision, take responsibility for quality assurance and ensure the inclusiveness and access.

The new partnership should aim to create a learning culture which should enable the establishment and maintenance of an institutional structure achieving lifelong learning, wider participation in education and training, and fostering a work ethic and a spirit of entrepreneurship.

Governments, industry and other stakeholders should recognize both its monetary and non-monetary benefits as well as the extremely valuable but often overlooked resource contribution of the voluntary and NGO sector. Governments and the private sector must recognize that TVE is an investment, not a cost and that its funding must therefore be shared to the maximum extent possible between government, industry, the community and the learner.

A functioning economy is best served by a diversity of public and private providers of TVE operating in healthy competition within a national framework of quality assurance. The government should assume responsibility for ensuring basic strong initial vocational preparation even when it is not the provider. Governments should also be considered as a provider of last resort to guarantee that potentially excluded populations are ensured access to TVE. In particular, all countries should expand employment-based programmes well articulated with institutional training. Here the private sector has a particularly important role to play.

Also mentioned are coordinating and streamlining the government departments and agencies sharing often overlapping responsibilities for various elements of TVE, the establishment of effective mechanisms, such as research, for sharing experience and expertise between TVE partners, and sharing experiences with national TVE policies and with appropriate public and private roles and partnership between countries, among them developing and developed countries and emerging market economies.

International co-operation in TVE was encompassed. International agencies must urgently provide more financial and technical support for TVE. UNESCO and its international partners are urged to increase their co-operation to enhance TVE, with UNESCO assuming the leading role through its comparative advantage in the various fields of education, as are the North and the South and the countries of the South.

International financial authorities must recognize that education and particularly TVE helps to maintain peace and stability and prevent social dysfunction and should incorporate the support of TVE in their conditions for assistance.

The Congress strongly supports UNESCO in its efforts to develop a strategy for TVE for the first decade of the 21st century. A number of practical suggestions are made, including considering the establishment of an international prize for innovation in TVE.

The new expanded vision of TVE endorsed by the Congress is summed up as incorporating a new relationship between the various sectors of education and training, the need for an holistic approach to the preparation for life and the world of work and the increasingly seamless pathways of lifelong learning. The Congress recommends that UNESCO, to guide its strategy for the 21st century, reformulate its approach as Technical and Vocational Education and Training, TVET.

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Appendix 1*Percentage ratio of 6 – 14 year olds to the population aged 15-64*

	1985	1995	2005
World	31.9	29.6	25.8
More developed regions	19.1	17.3	16.0
Transition countries	22.2	23.0	16.7
Less developed countries	45.6	46.1	40.8

Estimated illiterate population (millions) aged 15 and over.

	1985	1996	2005
World	885.9	884.7	869.5
More developed regions and countries in transition	22.5	12.9	8.6
Less developed countries	863.3	871.8	860.9

Enrolments (millions) and gross enrolment ratios (GER) in primary education

	1985		1995	
	Enrolment	GER	Enrolment	GER
World	567.2	99.1	650.2	99.6
More developed regions	61.8	101.9	62.7	104.5
Transition countries	29.8	99.0	28.9	98.
Less developed regions	475.7	98.7	558.6	99.1

Enrolments (millions) and gross enrolment ratios (GER) in secondary education

	1985		1995	
	Enrolment	GER	Enrolment	GER
World	291.6	48.5	372.0	58.1
More developed regions	72.3	92.3	75.3	105.8
Transition countries	36.0	94.6	40.7	86.9
Less developed countries	183.3	37.7	256.1	48.8

Enrolments (millions) and gross enrolment ratios (GER) in tertiary education

	1985		1995	
	Enrolment	GER	Enrolment	GER
World	60.3	12.9	81.7	16.2
More developed regions	25.1	39.3	34.3	59.6
Transition countries	10.9	36.5	10.8	34.2
Less developed countries	24.4	6.5	36.6	8.8

Number of teachers (all levels) per thousand population in the age group 15-64

	1985	1995
World	16	16
More developed regions	22	23
Transition countries	24	27
Less developed countries	13	13

Source: World Education Report 1998, UNESCO pp. 105-108

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Workforce Preparation in a Global Context has chapters written by 20 authors on contemporary national and global issues involved in vocational education and training, covering various parts of the world. Four central themes emerge from the materials presented here: parity of esteem between vocational and general education, the need for research on vocational education and training, women's leadership training, and sustainable development.

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